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Editorial Notes

Low Temperature Carbonization

IT may not have escaped our readers that the low temperature carbonization industry—that hitherto poor but struggling little sister of the high temperature industry—has entered a new phase. There was the initial stage of high hopes based upon laboratory experiments which proved so conclusively that it is one thing to treat coal on the pound scale, but quite another thing to convert those systems into the ton scale. A great deal of money invested by the over-sanguine and ignorant was lost during this stage. The industry then became a prey to the speculator, and more money was lost. The facts recorded in the Labour Party's Oil from Coal report are evidence of the losses that these two stages involved. All this time, however, scientific work was being done upon the plastic state of coal and other information and experience were being amassed which were later to be turned to account. This third stage of the industry, which was initiated largely by people who were interested primarily in high temperature carbonization and for the knowledge gained to be later applied by the low temperature specialists, coincided with the first two stages but still continues.

The loss of capital in the industry should not be ascribed to any lack of moral qualities in most of the inventors. It is a consequence of our industrial system. An inventor studies a problem and believes that he has the solution. As likely as not he has no capital, so he must find backing. Two courses are open to him. He may get a financier to back him, or he may go for his backing to a firm operating in that line of business. In many instances he goes to the financier, for, with a few noteworthy exceptions, British engineering firms are not disposed to lay out their capital to assist the inventor who has an idea. It must have passed the "idea" stage before that proposition appeals to them. There have been occasions upon which British engineering firms have taken up low temperature carbonization and it cannot be denied that more solid progress has been made in that way. The ultimate process may or may not have been adopted thereafter, but there has been an atmosphere of responsibility often lacking when financiers have had a finger in the pie. The financial man is obviously not interested in the technical development of a new industry, but in making money. It is the gas engineer's job to make, buy, and sell therms; it is the financier's job to deal with money, and mere wealth often is only a secondary consideration. Thus, the financier's problem is not: How can I establish a new and valuable industry, but how can I turn this scheme into money? That explains the second stage of the low temperature industry.

The industry, as we have said, has now entered a new—the fourth—stage. We do not hear so much of financial operations involving flotations of shares for new companies with glowing prospectuses. The experience amassed during the third stage is being applied and the industry is getting on to the large works scale. We have the many plants of Low Temperature Carbonisation, Ltd., at Barugh, at Askern, at Bolsover, at Meiros Colliery in South Wales, and the plant operated under licence, by the South Metropolitan Gas Company at East Greenwich; there are the two plants of the National Coke and Oil Company; there is the new plant, now nearly ready for operation, erected by British Coal Distillation, Ltd., at Nottingham; there is the Hird plant at Nostell Colliery, and so on. In addition to these, there is in operation a battery of low temperature coke ovens on the Cellan-Jones patent on the North-East coast at Seaham Harbour, and other batteries are in contemplation, and the Moore process at Queensferry is supplying gas to the local gas grid, comprising five gas-works. Most of these plants carbonize on the scale of hundreds of tons of coal per day. In addition to this we have several other installations that are operating on the semi-commercial scale, carbonizing anything from a ton or two up to 100 tons of coal per day. Among these plants may be mentioned the original pilot plant of British Coal Distillation at Newbold in Leicestershire, the coal Research Syndicate plant at Mansfield Colliery in Nottinghamshire, each of which deals with something like 100 tons of coal per day, and as an example of a smaller pilot plant we may instance the Lloyd retort at Sheffield and the Morgan retort at Wingate, Durham, carbonizing 4 to 6 tons per day, a report on which was lately issued by the Fuel Research Board; the Fuel Research Board's own plant comes under this category, a commercial unit being also in operation at Parkgate Coke Ovens, Rotherham.

A Growing Industry

THIS list does not profess to be complete, but it is sufficient to show that this fourth stage of development is the most promising. The large commercial plants are producing for the market, though it may yet be too early to say with confidence that all of them are established upon a sound commercial basis. Probably another five years will enable that problem to be discussed with some assurance. The smaller plants are selling their output quite successfully and are gaining experience and making improvements preparatory to erecting plant for purchasers. The industry, in short, is growing up and at any time may become fully adult. The annual output of low temperature carbonization works increased slowly from 200,000 tons in 1930 to 364,000 tons in 1936. It is quite possible that there will be a jump to well

over 1,000,000 tons in the near future. When it is realized that there is only about 4,000,000 tons of oven coke sold in the gas coke market annually, it will be seen that within a very few years the competition of low temperature coke may well become a vital factor in the economics of coke sales. It has been shown that the cost of gas production depends upon the return from coke. When the price of coke in a particular instance is 16s. a ton, the cost of gas production may be of the order of 1·4d.; but when the coke rises to 28s. a ton, the cost on this basis will fall to 0·3d. What will the future bring when the low temperature carbonization industry "grows up"?

The situation is peculiarly interesting. On the one hand, we have the ever-increasing production capacity of the low temperature industry—a capacity which we believe will be further increased considerably within the next two or three years. We have also the undoubted increasing use of coke-burning stoves and grates which render the use of the very highly combustible high-volatile open-grate coke unnecessary. Gas coke and the more combustible oven cokes have therefore been put in a position to compete with the much more expensive low temperature cokes. We have a suspicion that the present high temperature cokes would be all the better for a little higher combustibility and that this is the sort of question that the Gas Industry must be asking itself during the next year or two. We have no objection to long-range research designed to avoid the production of coke, but at least let us not, while reaching for the moon, neglect more immediate practical subjects.

The low temperature carbonization industry, we have said, is growing up. The recent "JOURNAL" publication entitled "Order or Chaos in the Coke Market" shows how we and the coke oven industry must put our house in order. The article upon this same subject by a member of the Coke Oven Managers' Association, the first part of which was published in last week's "JOURNAL," and which is concluded in our issue to-day, gives some unofficial coke oven views upon this subject of marketing. The Papers read before the Institution of Fuel by Mr. G. W. J. Bradley, the President of the C.O.M.A., and Dr. G. E. Foxwell, and before the C.O.M.A. by Mr. W. L. Boon and Dr. Foxwell, show in what direction the minds of the two industries are moving. *Festina lente*, however, seems to be the motto, and it sometimes surprises us to find just how slow British industrialists are in taking up a new idea. Meanwhile, what is this growing-up low temperature carbonization industry doing about it? So far as we know, there is no suggestion that the low-temperatrue carbonization people would be prepared to join an association devoted to the sale of high temperature coke.

Sales Campaigns

THE Address of Colonel Bristow to the shareholders of Low Temperature Carbonisation, Ltd., recently gave some indication of the scope of the sales campaign of this Company. The advertising campaign carried on in the National Press is certainly intensive, and this campaign cannot be without its effect on the general public that buys so largely from advertisement. In addition to this, arrangements that have been made for the sale and distribution of "Coalite" have been greatly extended. District offices have been established in a number of cities and a large number of new distributors have been added. Colonel Bristow went on to say: "Mr. W. R. Gordon, who was Director of the Coal Utilisation Council from its inception, has accepted the post of Commercial Manager with this Company. Mr. Gordon is actively engaged in developing the advertising and distribution departments of the Company's business. . . . Sales of Coalite for April and May this year are over 40% in excess of last year's figure. Important work has been carried out by one of the leading railway companies with a view to abolishing the use of gas for cooking and heating purposes on their trains. Experiments with Coalite have proved successful and stoves designed to use Coalite are now being constructed. In addition, a special train which is being sent to the Chicago Exhibition as a British exhibit will be equipped for burning Coalite for cooking." In addition to this publicity work, the Company's research department has been busy. Special Coalite for use in transport vehicles operated by producer gas units has been evolved and vehicles are in successful commercial operation. Further uses have been developed for the various fractions of the tar and in many other directions the Company's development work is showing results. It cannot be doubted that other companies are working on similar, though perhaps less ambitious lines. The Gas Industry must consider carefully what will be the repercussions of this adolescent industry upon its business.

In considering this problem it must not be forgotten that many of the newer low temperature processes can best deal with non-coking coal; the owners of non-coking coals will welcome anyone who can show them a feasible method of up-grading the smaller coals of this character. This in itself is a matter of national importance; the higher grade coking coals should be reserved for furnace coke production, since our iron and steel industries are so dependent for low costs upon the quality of the coke used in the blast furnaces. One of the great objections to prohibition of the use of raw coal disappears with the discovery of methods of converting non-coking coals into usable household solid fuel. It can be anticipated that this development will receive the approval, and perhaps the tangible approval, of the Government. Again we ask the Gas Industry, and the coke oven industry, to consider where they will stand in relation to the general problem of selling smokeless domestic fuel.

Factories in 1937

THE Annual Report of the Chief Inspector of Factories and Workshops for 1937 has now been published, and it is naturally of immediate interest to the Gas Industry, which has helped in the increased industrial activity in all parts of the country. An encouraging feature of this revival has been the establishment of new industries to supplement the former staple industries in areas which had suffered during the years of depression, affording a means of stabilizing conditions in the future by counteracting some of the effects of a slump in the staple trade or trades in any one area. These new industries have offered the Gas Industry new opportunities for load building, and the earning power they have created is obviously beneficial to domestic as well as industrial gas consumption.

With the growing appreciation by the industrialist of the very great advantages of gaseous fuel, gas undertaking executives become more concerned with general industrial trends, and of recent years much has been said about a drift of industry to the south, the suggestion being made that new factories in the south were the result of transfers from the north. Last autumn we referred to this suggestion in these columns, calling attention to the issue by the Board of Trade of a Survey of Industrial Development in Great Britain. The conclusion drawn from the statistics set out in that report was

that there was no evidence of transfer of industries from north to south, but there was obviously a strong tendency for new industrial operations to concentrate on Greater London. Recent evidence submitted by the Federation of British Industries to the Royal Commission on the Geographical Distribution of the Industrial Population again quoted as misconceptions statements that the growth of London was the result of this drift of industry. Nor does the Report of the Chief Inspector of Factories find support of this drift, but it states that there is evidence that, in choosing localities for new works, industrialists are now taking into account factors that were formerly of less importance and are becoming aware of the advantages to be gained by building their factories in a district where a supply of labour is available, rather than in an already congested industrial area into which they have to bring their workers from outlying dormitory towns, or from an ever-widening radius of surrounding country.

We are glad to note in the Report the reference to the rapid strides which are being made in the pottery industry towards more efficient and economical firing methods, to the increasing number of gas-fired continuous ovens in Stoke. This development " has resulted in a great improvement in the working conditions in the Potteries themselves and in the surrounding atmosphere." Another interesting reference is to lighting; and as readers are aware, the new Factories Act, which came into force on July 1 of this year, requires for the first time in factory legislation in this country both sufficient and suitable lighting, and that a reasonable temperature shall be maintained in every workroom—a provision which affords a useful weapon to gas salesmen anxious to demonstrate the efficiency of gas as a lighting and heating medium. And in this connexion we recall a recent Paper by Mr. F. C. Smith, of the Gas Light and Coke Company, in which he indicated the order of the contribution the lighting installation can make to the heating requirements. One of the instances considered was a single floor factory of area 10,000 sq.ft., where the heating requirements were met by radiant panel heaters maintaining an air temperature of 50°-55° F., this temperature, of course, being supported by thermal radiation from local sources suitably disposed. If the lighting installation consisted of gas units fitted with enamelled shades complying with Home Office recommendations, then, with an illumination level of 5 foot-candles at the working plane, the lighting would contribute 30% of the heating requirements; while with an illumination level of 15 foot-candles its contribution would amount to 90% of the heat requirements. In the Factories Report, by the way, mention is made of several instances of complaint on the part of workers on the grounds of colour distortion with mercury or sodium discharge lamps, and because of the stroboscopic effect of this system, which tends to make moving machinery slowed down or even stationary.

Accidents

A CORRESPONDENT in a letter published in the " JOURNAL " last week contended that carelessness is the underlying cause of so many accidents that, if only the public could be told and impressed with the importance of taking care, the alarming accident figures would be rapidly reduced. The Chief Inspector of Factories states in his Report that " no one can examine accident reports without being impressed by the way in which carelessness, or even downright negligence, is shown as the cause again and again; " and he gives brief descriptions of glaring examples. During the year there was a notable increase in the number of accidents; in factories and workshops alone there were 176,013, including 716 fatalities. The new Act will no doubt play its part in effecting a reduction in certain kinds of accident, but there will remain a high percentage of those due to the use of hand tools, stepping on or striking against objects, handling goods, and miscellaneous causes, which legislation can hardly affect. Reference to the tables given in the Report shows what a large proportion of the total accidents is due to these causes. Exercise of reasonable care for themselves and forethought for others on the part of all concerned would result in an immediate and very marked decrease in the number of accidents. A type of accident which should not happen is that caused by cleaning machinery in motion, and sepsis is another prolific cause of reportable accidents. Many slight injuries would not involve more than three days' absence from work, and so become reportable accidents, if full advantage were taken of the first-aid facilities available. " One of the most pressing problems of to-day," states the Report, is how to get workers really interested in safety. If this could be done it is certain that the effect in reducing the present large total of reported accidents would be most marked. At the same time there is plenty of scope for some employers to bring about beneficial results by what may be termed good housekeeping methods, as well as by better compliance with the law." And after remarking that some workers still refuse to believe that shafting is dangerous—that " they think they are too clever to be caught "—and calling attention to the large number of accidents for which hoists were responsible, the Report, discussing the constitution of safety organizations, comments on the difference of opinion as to whether workmen should be represented on safety committees. It would seem that co-operation, which is essential if the number of accidents is to be reduced considerably, can best be achieved by encouraging workmen to take an active part in such organizations.

The accident figures given in the Report relating to gas-works show a total of 1,998 for the year, of which 20 were fatal. Nine accidents were due to the cleaning of machinery in motion, there were 117 cases of eye injury, and sepsis accounted for 124 cases.

Personal

The congratulations of the Industry will be extended to Mr. C. M. CROFT, Chief Engineer and General Manager of the Wandsworth and District Gas Company, on being appointed a Deputy-Lieutenant of the County of London.

Obituary

Mr. A. J. HARRISON, Engineer and Manager of Accrington District Gas Board, sustained a bereavement, on Aug. 8, by the death of his wife.

* * *

The death has occurred of Mr. THOMAS CLARK, who was Chairman of the Directors of Castle-Douglas Gas Company and a former Provost of Castle-Douglas.

* * *

Mr. JOSEPH SAMUEL FRITCHLEY, of Wirksworth, Derbyshire, has died at the age of 77. A member of the Wirksworth Urban Council for more than 20 years, he was also a Director of the Wirksworth Gas Light and Coke Company.

* * *

Mr. WILLIAM HUMPHREY, a former Manager of the Hawkhurst Gas-Works, died at Plaxtol on Aug. 7, aged 69.

News of the Week

Alterations and Improvements to their showrooms and offices at South Shields are to be carried out by the Newcastle-upon-Tyne and Gateshead Gas Company.

An Increase of ½d. per Therm in the price of gas as from the end of the current quarter has been agreed by the Hinckley Gas Department consequent upon the rise in the cost of coal and higher wages.

The Nominal Capital of the Cannock Gas Company has been increased by the addition of £17,250 beyond the registered capital of £87,495. The additional capital is divided into 17,250 4½% redeemable cumulative preference shares of £1 each.

Among the Objects of a Special Order for which the Bridport Gas Company intend applying to the Board of Trade under the Gas Undertakings Acts, 1920 to 1934, is an extension of the limits of supply within which the Company are authorized to supply gas.

The Entry of the Dover Gas-Works Employees' Sports Club gained a well-deserved first prize in Class B at the Dover Carnival on Aug. 10. It consisted of a huge cage in which members of the club, dressed as wild animals, disported themselves in a manner which created a good deal of amusement.

A Cablegram received by Messrs. William Coward & Co., Ltd., 3, St. James's Square, S.W. 1, from their principals, the Metropolitan Gas Company of Melbourne, states that the Gas Company have made a net profit of £210,564 during the year ended June 30, 1938. The transfer is £30,000, final dividend 6s. 6d., and £78,985 has been carried forward.

The Allotments and Gardens of employees of the Newport (Mon.) Gas Company recently underwent their annual inspection. Mr. R. Wilson Bartlett, J.P., a Director of the Company, presided, and was supported by Mrs. Bartlett, Mr. G. M. Gill, Director, Mr. J. H. Canning, O.B.E., J.P., Engineer and Manager, and Mr. R. S. Snelling, Secretary. Prizes were given by the Directors, Mr. Bartlett awarding special prizes for the four best flower gardens. Mr. Canning read the report of Mr. G. Chambers, judge for the allotments competition, which stated that taking everything into consideration, and more especially the long dry spell early in the year, it was considered the plotholders had done remarkably well; certainly some of the vegetables would have done credit to any gardener. Thanks were accorded the judges, Mrs. K. M. Rust, Mr. Chambers, and Mr. H. Basham. Mr. P. Olds proposed a vote of thanks to the Chairman and Directors for promoting the competition, which Mr. P. White seconded.

The Payment of a Quarterly Service Charge amounting to 9s. 9d. now enables domestic consumers of the Ramsbottom Gas Company to obtain all their gas at 4½d. per therm.

Copies of the Recently Issued British Standard Specification (No. 804-1938) "Crucible Swelling Test for Coal," may be obtained, price 2s. each, from the Secretary of The Institution of Gas Engineers.

Notice is Given by the Ennerdale Rural District Council that an application is intended to be made to the Board of Trade for a Special Order under the Gas Undertakings Acts, 1920 to 1934, to define and extend the limits within which the Cleator Moor Gas Department (which is controlled by the Council) is authorized to supply gas and for other usual purposes.

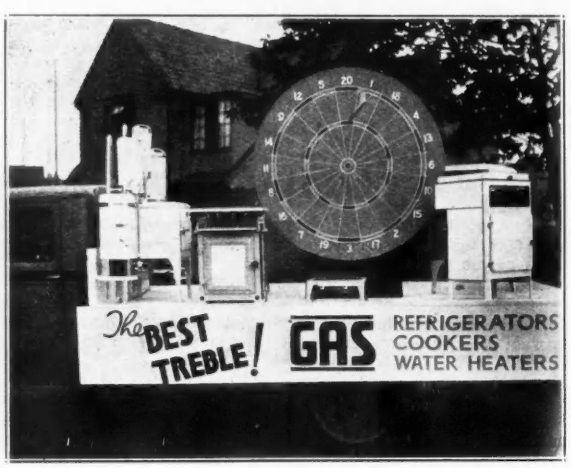
The Modification of the Provisions affecting the charges which may be made by the Luton Gas Company by substituting for the standard price of 14·2d. per therm now authorized the standard price of 16·09d. per therm is the purpose of a Special Order for which the Company have applied to the Board of Trade under the provisions of Section I of the Gas Regulation Act, 1920.

A Definition of their Limits of Supply is the principal provision of a Special Order for which the Leamington Priors Gas Company and the Warwick Gas Company intend to apply to the Board of Trade under the Gas Undertakings Acts, 1920 to 1934. The opportunity will be taken by this Order to extend the limits of gas supply in a manner most advantageous to the respective distribution systems of the two Undertakings.

An Issue by Tender of such an amount of 4% redeemable preference stock as will, with premium, realize the sum of £56,530 10s. 9d. is being made by the Bedford District Gas Company. The minimum price of issue is par, at which figure the stock will be redeemed on June 30, 1958. The stock will rank *pari passu* with the existing preference stock of the Company, except as to rate of dividend. Tenders for this issue must reach the Secretary of the Company not later than 11 a.m. on Aug. 25.

New Sports Club Premises for the Houghton-le-Spring Gas Company were opened recently by Mr. G. W. Martin, Engineer and Manager. Old lamp sheds have been converted by members in about two months into a new club. Gas fittings were given by Mr. Martin. The facilities include table tennis, darts, and dominoes. Mr. Martin was presented with a pipe as a memento of the occasion, while Mr. J. Tindale was presented with a barometer, and Mr. J. Lowery with a pipe and tobacco pouch in appreciation of their services in helping to convert the old premises.

Another "Treble"



Our photograph shows the entry of the Canterbury Gas and Water Company in the recent local Carnival to which reference was made in our news columns last week. This topical display attracted much public interest.

Forthcoming Engagements

[*No meeting of the Central Executive Board of the National Gas Council or of the Central Committee of the Federation of Gas Employers will be held during August.*]

September.

5 to 8.—A.P.L.E.—Annual Conference at Bournemouth.
8.—North British Association.—Annual Meeting at Largs.
10.—Junior Gas Association.—Joint Visit to Empire Exhibition, Glasgow.
12.—I.G.E.—Research Executive Committee, 2.30 p.m.
12.—L.C.C.A.—Technical Committee, 11.30 a.m.
15.—I.G.E.—Finance Committee (instead of Sept. 13), 1.45 p.m.; Membership Committee (instead of Sept. 13), 2.15 p.m.; General Purposes Committee, 3 p.m.; Refractory Materials Joint Committee, 2.30 p.m.
15.—S.B.G.I.—Council, 2.30 p.m.
15.—Wales and Mon. Association.—General Meeting at Porthcawl.
20.—I.G.E.—Gas Education Executive Committee, 2.30 p.m.
22.—I.G.E.—Gas-Works Safety Rules Committee, 2.30 p.m.
23.—I.G.E.—Joint Lighting Committee, 2.30 p.m.
26.—L.C.C.A.—Finance Committee, 10.45 a.m.; Executive Committee, 11.15 a.m.; Central Committee, 2.30 p.m.
28.—I.G.E.—Pipes Committee, 2.30 p.m.
30.—I.G.E.—Liquor Effluents and Ammonia Committee, 11.15 a.m.; Joint Research Committee, 2.30 p.m.

October.

1-4.—B.C.G.A.—Annual General Meeting and Conference at Brighton (for Programme see p. 34 of "JOURNAL" for July 6).

Gas Lighting at Southborough

Tunbridge Wells Company's New Contract

At the monnly meeting of the Southborough Urban District Council, tenders were considered for the the lighting of the Great Bounds Estate. It was resolved that the Tunbridge Wells Gas Company's tender be accepted under a seven years' contract.

This important public lighting contract closely follows the Council's decision to increase the number of gas lamps in Yew Tree Road and several other side streets.

The local Press takes the opportunity of congratulating the Gas Company on the excellent lighting in Southborough, and remarks that the Council's decision to extend the use of gas for this purpose reflects the appreciation of the Southborough public to the very efficient service rendered by the Tunbridge Wells Company.

It would seem that private traders in both Southborough and Tunbridge Wells are fully alert to the claims of gas for outside shop lighting. Following one of the finest examples of parade lighting by modern gas lamps in Monson Road, Tunbridge Wells, gas fitters are to be seen actively engaged in fitting up new types of gas lamps for traders in many parts of the district.

(On page 352 of last week's "JOURNAL" the Great Bounds lighting contract was inadvertently attributed to the Burwash Urban District Council.)

New Benzole Plant at Clitheroe

The new benzole extraction plant at the Clitheroe Corporation Gas-Works was inaugurated by Ald. R. Manley on Aug. 8.

Assuring consumers that the calorific value of gas would not be affected by the new plant, which would be a remunerative proposition, Ald. Manley said there would be a reduction of naphthalene which was the cause of stoppages in service pipes, and also a considerably reduced percentage of sulphur. Under test, the plant, which would produce 20,000 gallons per year, had proved very satisfactory.

New offices, workshops, stores, and improved accommodation for the employees were also opened.

Alderman W. H. SEEDALL (Chairman of the Health Department) said that when he first entered the Gas-Works 26 years ago the conditions for the men were very bad. The place had been revolutionized, and the time was not far distant when important improvements would be made in other departments. Ald. J. THORNBER, Mr. W. W. WHITESIDE, and Mr. W. STANDRING also spoke of improvements in the Gas Undertaking, while Mr. R. W. HARRIS (Gas Engineer and Manager) said that by installing the benzole plant the Council were taking the long view. Petroleum would not last for ever, and the time would come when benzole would be in great demand.

Meter Rents Discussed at Stockport

The Stockport Town Council has taken back for further consideration a proposal to institute a meter rent.

Ald. Sir Thomas Rowbotham stated that out of 573 undertakings in this country only 70 did not charge meter rents, and the rest did as the Gas Committee now suggested. Some people suggested there should be a straight charge on the cost of gas, but there was a straight charge in any case. There were 26,000 customers on the books who were not profitable to the Undertaking, and the meter rent proposition was, in the Committee's judgment, the easiest way of spreading this little burden over the widest possible area, and doing a kindness to the poorest members of the population. This was the wisest method of meeting this enormous extra charge of £15,000 in the cost of coal.

After discussion, Sir Thomas added that he would see that every member of the Council was furnished with full details, and after they had studied them they would find that the Committee had gone very carefully into the matter.

Women's Gas Council

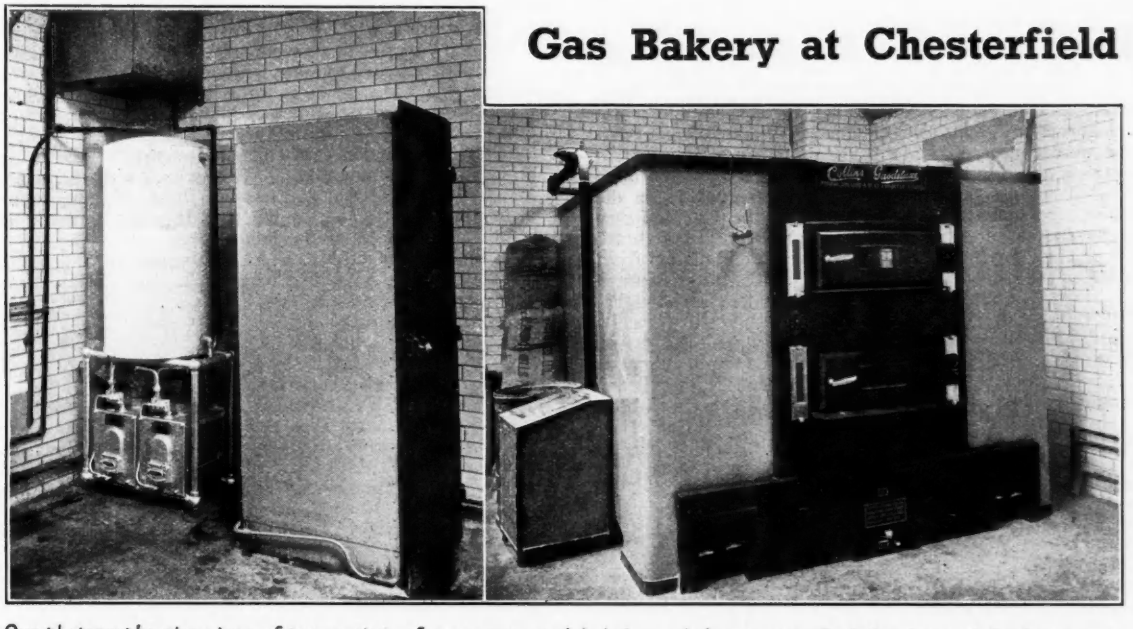
Attending International Congress.

Miss Kathleen Halpin, Organizing Secretary of the Women's Gas Council, is leaving England next Saturday (Aug. 20) by the *Empress of Britain* on a visit to Canada and the United States. She will be accompanied by Miss Willans, Head of the Home Service Department of the Gas Light and Coke Company, London, and they will both attend the Seventh International Management Conference in Washington in September.

The Women's Gas Council have contributed to the Paper entitled "Planning of Kitchens and Developments in Time and Motion Study," which has been prepared for the Home Section of this Conference by the Council for Scientific Management in the Home.

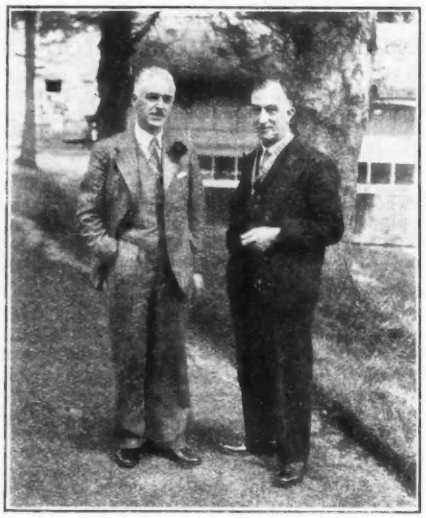
Miss Halpin will be returnng in time for the B.C.G.A. Conference at Brighton, when the Women's Gas Council are entertaining the ladies on Monday evening, Oct. 3.

Gas Bakery at Chesterfield



Our photographs give views of two sections of a reconstructed bakehouse belonging to a Pork Butcher and Confectioner in the Chesterfield district. The original building was an old one which has been re-built in brick with white-tiled interior. The illustration on the right shows one of the three Collins gas ovens, two of these being new ones and the other a conversion from coke firing. All the hot water requirements are provided by gas, together with a proving oven and three 40-gallon boilers for fat rendering and meat boiling. The left-hand illustration shows the proving oven and two Potterton boilers for hot water supply. The proprietor has expressed complete satisfaction with the installation.

The Irish Association of Gas Managers



Presidents—Past and Present—
Mr. F. G. McElwee and Mr. Arnold Law.

Forty-Sixth Annual General Meeting in Dublin, Aug. 9.

This year it was the turn of Dublin once again to welcome the members of the Irish Association, and most cordial the welcome was. A year ago all felt that Mr. A. Law, of Limerick, would make a very good President, and this confidence proved to have been in no way misplaced. The proceedings were enjoyable throughout, and no one who visited Dublin for the occasion regretted having done so. The contingent from across the Channel was a big one—headed by Mr. R. Robertson, of Bristol, the President of The Institution of Gas Engineers, and including also, among others, Dr. W. T. K. Braunholtz, the Secretary, Mr. E. J. Fottrell, Joint Manager of the National Gas Council of Great Britain and Ireland, Mr. P. J. Lucas, Secretary of the British Commercial Gas Association, and Mrs. Eileen Murphy, Home Service Director of that Association. The reception of each and every one was such as to ensure still further visits in the future.

The LORD MAYOR (Alderman A. Byrne, T.D.), who has so long and so ably represented the civic life of the City of Dublin, remarked, in opening the proceedings, that this was the fourth or fifth occasion within the past eight or nine years upon which he had had the privilege and the pleasure of welcoming the members of the Association. He did so with the greatest possible delight, and he wished to extend a specially hearty welcome to the visitors from across the Channel and from over the border. He hoped the deliberations which were to follow would be fraught with much good to the undertakings which the members represented. From what he had heard, he understood that there had been, and if not there ought to be, great developments so far as the gas undertakings were concerned. Much attention had been given to the housing question in Dublin, and it was thought that none of the houses was complete without a gas cooker for the benefit of the tenants. Far, however, as the Gas Industry had gone, he felt sure that great developments still lay ahead. Within the last few months he had received complaints from residents on the outskirts of the city where more chimney stacks were appearing. They were happy to see them, because they were a sign that the city was progressing, but he thought that the time ought to have arrived when there would be no complaints about heavy black smoke from chimneys in residential areas. There ought to be some scientific means of abolishing the smoke nuisance in this direction, without abolishing the factory chimneys.

The PRESIDENT (Mr. A. Law, of Limerick), before delivering his Address, thanked the Lord Mayor for opening their proceedings. Alderman Byrne, he said, was known all over Ireland. He was very much like the Gas Industry—as much a part of the life of the people in Dublin, as gas was a part of the life of the people of the country. Far beyond the confines of Dublin, people would be very sorry to find that the city was no longer represented by Alderman Byrne. They were particularly glad to have with them that morning Mr. R. Robertson, of Bristol, the President of The Institution of Gas Engineers. When he (Mr. Law) had the pleasure of meeting Mr. Robertson in London a short time ago, and invited him to attend the Irish meeting, Mr. Robertson most heartily agreed to come over, because he believed that it was the duty of the President of the parent Institution to attend meetings of this character. [Applause.]

PRESIDENTIAL ADDRESS.

The PRESIDENT then proceeded to deliver his Address, which will be found elsewhere in this issue.

At its conclusion,

Mr. P. J. MACEVOY (Midleton) said it gave him extreme pleasure to move a hearty vote of thanks to the President for his Address, which was of outstanding quality. Mr. Law, if he might so put it, was the spearhead of the Gas Industry in Ireland, situated on the very doorstep of their greatest competitor. His remarks with regard to housing schemes touched upon a fundamental factor in their Government policy—a policy which, to his mind, was the greatest work that any Government with the interests of the people deeply at heart could undertake. The experiences recounted by Mr. Law of his work in Limerick should be an encouragement and an incentive to the Gas Industry throughout the length and breadth of the land.

In the absence of Mr. J. A. Pemberton, of Sligo, the Immediate Past-President, he had much pleasure in presenting to Mr. Law the President's Medal, as a memento of a successful, and he hoped a happy, year of office. [Applause.]

Mr. F. J. EDMONDS (Waterford) seconded the vote of thanks, and expressed his appreciation of the Address. The President had laid great stress upon the housing schemes of the country. The Lord Mayor had also alluded to the same matter, and had expressed the view that the gas cooker had a rightful place in these schemes. He (Mr. Edmonds) would like to point out that, while fire places were being provided for the rise of coal, and while houses were being wired for electricity, the expense being included in the cost of the houses, and therefore paid by the tenants in the shape of a small increase of rents, the Gas Industry could rightly claim the installation of a gas cooker, to be included in the cost of the houses, just as the other things to which he had referred were paid for.

Committee's Report and Accounts.

Mr. L. W. DALBY (Kilkenny), the Hon. Secretary and Treasurer, next read the following report of the Committee:

Your Committee can again report that the affairs of the Association remain in a prosperous condition.

The 1937 Annual General Meeting in Belfast proved a success.

and the Papers presented by Mrs. Murphy, of the B.C.G.A., and by Mr. H. H. Hollis, of the Oxley Engineering Company, Ltd., were much appreciated.

We deeply regret that we have to record the death of three valued members. During the year there passed away Mr. Robert Campbell, of Carrickfergus, who joined our Association in 1898; Mr. C. P. Knight, of Belfast, who became an extraordinary member in 1904; and Mr. George William Anderson, of London, a member since 1907.

Members continue to raise the question of the month in which we hold our Annual Meeting. We must point out that our effort to obtain the views of all our members last year on this point failed to bring sufficient response to warrant a change.

During the year negotiations have continued with the Ministry of Industry and Commerce on the subject of the "Conditions of Employment Act." Captain G. Anderson, of Kilkenny, and Mr. F. J. Edmonds, of Waterford, are watching this matter on behalf of the Association and the National Gas Council.

The balance to the credit of our General Fund is now £124 11s.

Mr. GEORGE AIRTH (Dundalk), as Hon. Auditor, presented the accounts, and explained that the Association was some £18 down on this occasion, and it was important that they should keep their funds well up. There had been very little advance in the expenditure; the main reason for the balance being down was outstanding subscriptions.

Mr. MACEVOY having formally moved the adoption of the report and accounts, considerable discussion ensued with regard to the particular time of the year at which it was best that the annual meeting of the Association should take place.

Date of Annual Meeting.

Mr. EDMONDS, seconding the motion before the meeting, said sincere regret had been felt by the members at the absence from their meetings of those who controlled the two largest gas undertakings in Ireland. He referred to Mr. Smith and Mr. Grey, and their respective staffs. The members would much like to secure their closest co-operation and greatest assistance in helping on the work of the Association. On looking into the matter, it had struck him that the reason for these regretted absences might lie in the fact that the annual meeting always took place in the holiday month of August, and that the Association should therefore seriously consider whether an alteration in the date of meeting would not be advisable. If by making a change of date they could secure the presence, and thus the advice and co-operation of Mr. Smith and Mr. Grey and their respective staffs, they would have accomplished a good stroke of work for the Association.

Mr. J. M'NICHOLL (Cork) remarked that this question had been discussed on a former occasion, and he believed a questionnaire was sent out. He would like to know the result of that.

Mr. DALBY pointed out that the matter was referred to in the Committee's report last year. There were 140 circulars sent out, and of this number only 20 elicited a reply. The Committee felt that they could not act on the strength of such a slender response, particularly as those who did reply were equally divided in their views.

Mr. H. W. SAVILLE (Wexford) suggested that Mr. Edmonds should put his idea in the form of a motion.

The PRESIDENT pointed out that the matter had been very carefully considered by the Committee, but if the members thought that the sending out of another circular was desirable it was open to the meeting to so decide.

Mr. M'NICHOLL remarked that, in making any change, there might be a danger of clashing with other meetings. He suggested that during the coming year the Committee should again go into the matter thoroughly, and then at the next meeting bring forward some proposal on the subject.

Captain G. ANDERSON (Kilkenny) said he would like to second a proposal that the date be altered, so that the matter could be considered at that meeting.

Mr. DALBY expressed the opinion that July was the only alternative available.

Mr. AIRTH enquired whether those in favour of a change would canvass the two gentlemen to whom reference had been made and their staffs, so as to ascertain whether, if the date was altered, they would attend the meetings.

Mr. MACEVOY proposed that two members should go as a deputation to Mr. Grey and Mr. Smith before any change of date was decided upon.

The PRESIDENT suggested that the matter should be left to the Committee.

Some further discussion took place on the subject, and it was finally resolved:

> "That the next Annual General Meeting be held, as an experiment, in July next year; the actual date to be fixed by the Committee, as usual."

Members and their Ladies Assembled at Glendalough, Co. Wicklow.

Solid Smokeless Fuel.

Mr. M. BARASH, Ph.D., M.Sc.Tech., F.I.C., Head of Research Department, West's Gas Improvement Company, Ltd., then went over the main points of his Paper on the "Production, Preparation, Utilization, and Characteristics of Solid

Smokeless Fuel." This Paper, together with a report of the discussion which followed, will be dealt with in a subsequent issue of the "JOURNAL."

New Office Bearers and Members.

Mr. P. J. Lucas (London) and L. Fletcher (Glasgow) were appointed Scrutineers to go through the ballot papers, and having done so they reported the elections to be as follows:

President.—F. G. McElwee, Coleraine.
Vice-President.—Capt. G. Anderson, Barrack Street, Kilkenny.
Members of Committee.—A. S. Brook, Lisburn; and F. J. Edmonds, Waterford.
District Representative to Council of The Institution of Gas Engineers.—F. G. McElwee, Coleraine.
Auditor.—G. Airth, Dundalk.
Hon. Secretary and Treasurer.—L. W. Dalby, Kilkenny.
Ordinary Member.—Dr. W. T. K. Braunholtz, Secretary, The Institution of Gas Engineers, London.
Extraordinary Members.—J. R. L. Carter, Carbonizing Engineer, Exeter; F. S. Clegg, Messrs. Parkinson & Cowan, Belfast; Mr. Steel, Standard Furnace Company, Southport.

Thereafter, Mr. T. F. Shillington, of Belfast, was presented with the certificate in the Higher Grade Examination in Gas Engineering (Manufacture).

An Appeal.

Mr. EDMONDS said he would like to make an appeal to the members, in connexion with the death of Mr. F. L. Lusted, whose name was on the balloting list for election as a member that day. Mr. Lusted went to Waterford only in July last. He was taken suddenly ill, and died within a few days, leaving his wife with practically no means of support. Unfortunately, he was not a member of The Institution of Gas Engineers, and so his dependants had no claim on the Benevolent Fund of that organization, though they might see if it was possible to secure any assistance in that direction. It ought to be mentioned that the Directors of the Waterford Gas Company had come to the rescue and done their full share in the matter.

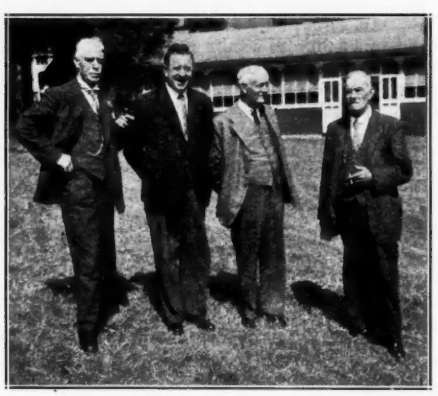
Mr. SAVILLE proposed that a contribution of twenty guineas be made from the funds of the Association.

Mr. AIRTH said he would like to second this. He had known Mr. Lusted since he was quite a small boy. His father was Manager of a works, and his brother was Manager of a works.

The proposition was agreed to, and the hope was expressed that the amount would be swelled by individual donations.

The Institution President.

Mr. ROBERTSON, on being called upon, said he was very glad to be afforded the opportunity of addressing a few words to the members, and thanking them for the privilege of attending the meeting. He found himself in very delightful company, and as President of the Institution he would like to extend to the Association best wishes for a successful gathering, and for continued prosperity. He had been greatly impressed by the air of cheerfulness that had marked the meeting. The air of optimism which pervaded the President's Address was most encouraging. It was good to note that the Gas Industry in Ireland was not only holding its own, but was



progressing. They had their own particular problems, of course, as well as those which were common to all gas undertakings; and the smaller works naturally felt that they were for the most part at a disadvantage as compared with the larger undertakings. Efforts had been made to deal with this difficulty in divers ways. During the past thirty years the technique of gas management had changed entirely. They had now the great national bodies dealing with different aspects of the Industry; and the officials of these bodies were always ready and anxious to help even the smallest undertaking. The question of coke was one that several speakers had referred to during that meeting as representing one of the main problems of the future; and this was where the advantage of specialization came in. There was also another problem which the Institution were dealing with hopefully, and that was the problem of ringing the changes between liquid, solid, and gaseous fuel; through the stages of coke, water gas, and petrol.

The SECRETARY announced the receipt of telegrams from Mr. R. Bruce Anderson (Past-President) and Col. W. R. Glover, conveying their best wishes for a successful meeting.

Dr. BRAUNHOLTZ said this was the first Gas Association of which he had been elected a member—and an ordinary member at that—and he was deeply conscious of the honour that had been done him.

In the interval between the close of the morning's proceedings and the private meeting in the afternoon of the National Gas Council of Great Britain and Ireland, the members,

visitors, and lady friends took light refreshments in the hotel, on the invitation of the President.

N.G.C. IRISH DISTRICT EXECUTIVE BOARD MEETING.

The customary meeting of the Irish District Executive Board of the National Gas Council took place in the afternoon, under the Chairmanship of Mr. J. M. M'Nicholl, of Cork (in the absence of Mr. W. J. Grey).

The report of the Joint Hon. Secretaries of the Management Committee was received and adopted; and it was reported that one addition had been made—Ballinasloe—to the elected representative members for Ireland.

Mr. J. D. Smith was unanimously re-elected Chairman of the District Executive Board, and Mr. W. J. Grey and Mr. J. Ronan were unanimously re-elected Vice-Chairmen.

The members of the Management Committee were re-elected as follows: Messrs. George Airth, George Anderson, W. J. Grey, J. M'Nicholl, B. Mitchell, W. M. Pettigrew, A. Robin, J. A. Rooney, P. J. Rooney, J. D. Smith, H. W. Saville, A. Walmsley, and L. W. Dalby.

The following were re-elected representatives to the Central Executive Board: Messrs. George Anderson, W. J. Grey, J. M'Nicholl, and J. D. Smith.

Mr. George Anderson was re-elected a member of the Emergency Executive Committee.

Mr. A. S. Brook and Mr. F. J. Edmonds were re-elected Joint Hon. Secretaries.

At the conclusion of the formal business, Mr. E. J. Fottrell spoke upon the work of the National Gas Council, and Mr. P. J. Lucas upon that of the British Commercial Gas Association.

ANNUAL DINNER.

The evening was devoted to the annual dinner, which was well served by the management of Jury's Hotel, and was accompanied by a not too long toast and some characteristic musical items excellently rendered. In every way the function maintained the reputation established by former similar events.

The toast of "Eire" was honoured at the call of the PRESIDENT, and this was followed by "Kindred Associations," submitted by Mr. J. M'NICHOLL, who pointed out that organized effort was essential to successfully overcome the problems of to-day. The members freely acknowledged the indebtedness of this small Association to the work of the other organizations in the United Kingdom. He coupled with the toast the names of Mr. Robertson, Mr. Fottrell, and Mr. Lucas.

Mr. R. ROBERTSON took the opportunity of again thanking the members for the very hearty welcome that had been extended to him as President of The Institution of Gas Engineers. It was a matter of regret to the Institution that they did not see so much of the Irish members as they would like to at their meetings in London. There was a friendliness in Ireland that made a stranger feel at home directly he arrived, and it had been a great pleasure to come among them.

Mr. E. J. FOTTRELL said he greatly appreciated the invitation extended to him year by year to attend these meetings; and Mr. P. J. LUCAS also voiced his pleasure at representing the B.C.G.A. at the annual gatherings of the Irish Association. He had been requested by the B.C.G.A. to convey their best wishes to the Irish Association and to the gas undertakings of the country.

The toast of "The Ladies" was submitted in eloquent terms by Mr. GEORGE AIRTH, and was as eloquently replied to by Mrs. EILEEN MURPHY, who asked that thanks should be sent to Col. Glover for the beautiful roses that he had provided for the ladies present.

Mr. H. W. SAVILLE proposed "The President," remarking that Mr. Law's conduct in the Chair that day had been all that anyone could have wished. He was the good companion that all gas managers desired to be one to another. There was nothing he would not do to help a colleague out of a difficulty.

The PRESIDENT suitably replied, and announced the receipt of a telegram from Mr. Sam Hall wishing them all a successful meeting, a happy evening, and an enjoyable excursion on the morrow.

The toast of "The Press" was proposed by Captain G. ANDERSON, and acknowledged by Mr. ALFRED HARRISON.

AT GLENDALOUGH.

Wednesday's excursion was memorable by reason of the facts that the weather was glorious, that the organization had been excellently carried out by the Secretary (of whose work in this connexion acknowledgment was made by the President during the day), and that the place chosen ranks high among the beauty spots of a country in which beauty spots are without number. Passing by way of the Scalp, Kerry, Enniskerry, Roundwood, and Laragh, the motor coaches reached Glendalough in time for lunch at the Royal Hotel, and thereafter a couple of hours were spent delightfully among scenery of surpassing grandeur and ruins whose history goes back into the dim and distant past. The place is one that makes an irresistible appeal, and it can be safely said that so long as Ireland lives Glendalough will never die.

The return journey was by the Vale of Clara, Rathdrum, Avoca, Glenealy, and Ashford, to Bray, where tea was served in the handsome new Railway Buffet, and a happy day drew to its close.

Golf.

The usual competition took place at the Castle Golf Club, Dublin, on Aug. 11, and resulted as follows:

Grant Cup.—P. J. McEvoy, Midleton, Co. Cork.
Runner-Up Grant Cup.—F. J. Edmunds, Waterford.
Captain's Prize.—F. G. McElwee, Coleraine.
Runner-Up.—J. K. Harrison, Armagh.

Petroleum Technology

Vol. 3 of Annual Reviews of Petroleum Technology (covering 1937) has now been published (pp. viii. + 490, 9 illustrations, cloth-bound; price 11s. post free from the Institute of Petroleum, Aldine House, Bedford Street, Strand, W.C. 2). It is the third volume of a series of annual reviews of technical developments in the petroleum and allied industries prepared by the Institute of Petroleum (formerly the Institution of Petroleum Technologists). It maintains the authoritative character of its predecessors and is about 50% larger than the corresponding volume of last year. Vol. 3 covers the literature published during 1937 and contains about 2,500 bibliographical references.

One of the most remarkable features of the work is its international character. Reviews of progress are not limited to developments in English-speaking countries, but cover the world. There are, for example, full reports on the operations of synthetic processes in Germany, developments in cracking in U.S.S.R., and a concise record of geological and exploration work in all countries where such work has been carried out.

The book is well arranged and handy for reference. There is very little duplication in its 27 chapters which cover the whole field of the petroleum industry from petroleum geology to the utilization of its products in automobile and aero engines. Approximately 100 pages are devoted to the subject of "alternative fuels" (motor benzole, carbonization processes, hydrogenation, and the Fischer-Tropsch synthesis).

Irish Association of Gas Managers

Presidential Address

OF

ARNOLD LAW

THE PRESIDENT.

Presented at the Forty-Sixth Annual General Meeting of the Association held in Dublin on Aug. 9.

First, I must thank the members for electing me as President of the Association. Secondly, I must apologize if my Address does not strike any spectacular vein, but in considering the theme of an Address to a particular branch of engineering or industry one is inclined to look for some subject of special interest to the members. I myself cannot think of anything more interesting than the Gas Industry we represent in Eire.

I think we can claim a peculiar position in view of the fact that our country is not so developed industrially as either England, Scotland, or even Wales, yet we must agree that progress has been made in this direction during the past few years, which has no doubt given us an opportunity to show the merits of gas and its uses. In most cases we have not a compact population at our disposal to serve, and our works generally are what is known as medium- and small-sized works. Yet I consider that we can claim a certain pride in "holding the fort" against competitors who have either the benefit of a modern centralization and control or whose commodity is sold by numerous agents, and which is not fixed by statutes or subject to the same restrictions; in these I refer to electrical, solid, and liquid fuel, and yet while we may claim that we are holding our own, and in many cases increasing our sales, it behoves us continually to review our position and take note of what sphere we can enter into to increase further the use of our products.

Are We Benefiting from Housing?

You are all aware that during the past few years building schemes have been inaugurated and others of more generous proportions are contemplated. Are we getting the benefit of these schemes? If not, we have reason to ask ourselves, why not? Speaking for our own gas department I am happy to state that we succeeded recently in booking a housing scheme with gas cooker, coke boiler, and gas poker as standard fittings, which I am hoping will lead to repeat orders in future housing schemes. This arrangement of cooker and coke boiler was decided upon after a canvass of earlier and smaller housing schemes, when it was found that occupiers had installed gas chiefly for cooking. After examining the cost per house for installing a cooker and coke boiler it was found to be definitely an advantage in all respects, taking into consideration cost of building, convenience, and not the least, added comfort and service to the tenant.

We have also been successful in interesting private builders now erecting houses with kitchenettes, to install cookers and coke boilers, or cooker only and boilers fixed at the back of the living room grates. Here, I think, we have opportunity for the addition of a sink water heater on simple hire purchase terms, and this business we are seeking to develop. I consider that we have here a wide field for development, and we may compliment the makers on the good progress made with this type of apparatus, particularly when we consider the ease of control and the very low cost of running which amounts to approximately 6 to 8 gallons of really hot water for one pennyworth of gas.

This type of heater is certainly a definite advantage to a consumer, particularly during the period May to September when the weather is mild, and no kitchen fire is required. While such undertakings as Dublin and Belfast which have large selling organizations at their command readily secure this business, can the medium and smaller undertakings benefit by the load? If not, it is an opportunity at meetings such as this to discuss our difficulties and exchange views to help each other.

While on the subject of service we read of tests being made, and in referring to the Gas Press we find that the Distribution Superintendent at Bedford "took the bull by the horns" and made a test under actual domestic conditions. We find that the gas boiling ring gave a comparison of just one-third the cost of the electric boiling ring, the result of this test being that the consumer changed over, and the gas consumption increased greatly, due to the adoption of other gas service developments.

This type of demonstration is far more productive of good than argument. This method of seeking extended business pays and pays well. It is well worth while to drop arguments, install apparatus on test, let our prospective clients see what they can do, and gas wins every time. I think sometimes we are too modest in our claims, but that is better than overstating them. We must at times speculate with the good service of gas to prove that gas is really essential to the comfort and economy of even the most modern households.

Hire-Purchase.

The reference to apparatus leads one to suggest a discussion on the merits of the hire-purchase system for all apparatus. The small undertakings need not consider that the hire-purchase system is only a risk to be taken by highly financed concerns. My experience is that the risk is small in relation to the improved business which results, and moreover the hire-purchase system gives the consumer the feeling of ownership, hence the less risk of being influenced by some other apparatus that, while seemingly attractive, is not by any means as serviceable.

Taking a summary of gas in housing schemes we can definitely claim considerable advantages. Our electrical friends specify a cooker 14 in. by 14 in. for a family of 7 to 10 persons, but what gas manager or salesman would specify a gas cooker of these dimensions for such a family? Gas gives a larger cooker at anything from £2 10s. to £3 cheaper, with the added convenience of thermostatic control, and this control is not of a snap type but can be controlled within *plus* or *minus* 1° F. If an electric oven had to be controlled within *plus* or *minus* 1° F. those cooking would be simply "run off their legs" attending to the switch owing to the snap action.

We have also a definite claim in room heating. One must have ventilation, and here gas scores again, heating and ventilating. The running costs of a gas fire we can claim as anything from 12 to 20% lower than electric *plus* necessary healthy ventilation, so that the gas fire embodies all the requirements of health, convenience, and cleanliness.

Water heating is a field for gas, and I consider we "hold the medal" for instantaneous water heating. Taking gas at 1s. per therm we can supply water at approximately 150° F. at the rate as low as one-eighth of a penny per gallon, and the electricity charge for this same service would need to be as low as three-eighths of a penny per B.O.T. unit, inclusive of standing charge. In addition the gas apparatus elements are of long life and require little skill for adjustment when necessary to suit local conditions.

By-Products.

What is our position with regard to our by-products, coke and tar? Coke at present is a good market, due chiefly, no doubt, to the greater cross-channel industrial demand which enables us to dispose of all our coke at a reasonably good

price, and even enables some smaller undertakings to use their tar for furnace firing, and so increase the salable coke.

Is this industrial demand for coke likely to continue? I am not too optimistic, and I think it would be as well to seek now to develop what would be a steady market. I refer to the demand for a solid smokeless fuel.

By increasing the demand for coke we must consider also the coke user who must be supplied with a size and quality which suits his purpose, and has a right to expect that the coke fuel supplied will always be of the same size and quality. We have not far to seek the results of this consideration, and one can note in Dublin here the wonderful results obtained by the sale of a domestic smokeless fuel properly graded and of a standard quality. Yet one can quite understand that it will take time—all developments take time; but I am confident that in this domestic market for coke we have ample scope for increased sales.

Modern apparatus is on the market which is adjustable for either quick burning for rapid delivery of really hot water, or conversion into a slow burning grate. The cost to the ordinary household for all their hot water requirements is in the region of 3d. to 4d. per day during the heaviest period, and, coupled with low running costs, we have cleanliness, quick action, and practically a smokeless chimney—a benefit to any community.

With regard to tar, I consider opportunities will be available in the very near future for the development of road tar requirements. As you are aware, work is proceeding at present on the installation of an oil refinery. Bitumen will no doubt be produced and home produced bitumen will be available for tar/bitumen mixture, and the demand for this and No. 1 and No. 2 tar will no doubt increase with the development and improvement of our roads. We should, I think, seek to use the available tar for refining purposes; here we find difficulty owing to heavy transport costs to the nearest refining plant, and here, I think, collective action is advisable with the Transport Authorities. I am of the opinion that tar for road making purposes will be in increased demand due to the expansion of our tourist traffic and the definite improved development of our roadways. While I am aware that the tar produced in Eire is not sufficient to meet the demand for road making purposes, yet I consider that some move should be made to absorb the tar available.

Leaving aside the production part of the business one may ask what is our relationship as employers? I claim, and I consider, very justly claim, that the Gas Industry is an ideal employer. One may read almost daily of strikes in various branches of trade, yet within the Gas Industry this is one form of publicity that we never get and naturally do not wish for. There must be some reason and the only explanation is that we are decent employers.

In view of our claims concerning our products and the manner in which we conduct ourselves, why should we not be proud and endeavour to seek by collective action to be given a square deal in the various schemes, particularly the housing schemes which are not only in progress but proposed.

I trust that, while my Address may not have struck a very informative note, my remarks may lead to a more open discussion of our Gas Industry and awaken some interest and encouragement; if so, I shall consider the time well spent.

Support "Your Own" Motor Spirit

Helping An Associate Industry

We take the following simple straightforward talk on the merits of benzole, from the July Co-Partners' Magazine of the Liverpool Gas Company.

Although it is only as recently as 1919 that benzole was first generally marketed as a motor spirit, it is to-day one of the most popular fuels on the road.

This widespread popularity of home-produced benzole motor spirit is of particular interest to members of the Gas Industry since benzole is produced in large quantities at British gas-works.

It can be truly said that the gas and benzole industries go hand-in-hand. Yet how many people in the two industries always bear that in mind? Do householders in the benzole industry use gas on every possible occasion? Do motorists in the Gas Industry use and recommend benzole motor spirit on every possible occasion? The answer is doubtless in the negative, but our friends in the benzole industry are co-operating in propaganda to make their personnel "gas conscious," and we in turn wish to emphasize the importance of gas personnel becoming "benzole conscious."

The wider use of benzole results in increased prosperity within the Gas Industry, and therefore it is only natural that we should ourselves use British benzole motor spirit in addition to telling all our motoring friends and acquaintances of its excellent qualities, particularly as we ourselves are benzole producers. If we investigate, we find that it is not merely a duty to use benzole fuel in its modern scientifically blended form—it is commonsense, for benzole is acknowledged by motorists and fuel technologists to be one of the most highly efficient and powerful motor spirits yet evolved.

The benzole produced in the coke ovens where coal is carbonized to produce gas and coke, is sold as National Benzole Mixture from the familiar pumps bearing the globe with the winged head.

One of the outstanding characteristics of this fuel is its startability, due to high volatility which allows the mixture to vaporize immediately in the cylinders and thus ensures a quick get-away even at very low temperatures.

The difference between Benzole Mixture and other blends of motor spirit is that benzole is a powerful and efficient fuel in itself and is not added to petrol merely as a preventative against "knocking." With many petrol blends, the special constituents added are used solely to decrease the quick-burning characteristics in certain petrols, but benzole gives extra power by reason of its greater weight.

Petrols weigh somewhat less than 7½ lb. to the gallon, whereas benzole weighs 8¾ lb. This means that in a gallon of benzole there is at least 1¼ lb. more fuel, which extra weight results in a greater number of heat units directly convertible into power. The consistent use of National Benzole Mixture ensures, therefore, a number of extra miles per gallon being obtained. It will be realized that this "Mileage Bonus," as it is known, shows a considerable saving on a year's running costs.

Thus by purchasing National Benzole Mixture you are not only aiding one of your own sister industries and also your own undertaking, but achieving maximum efficiency and economy in the running of your car.

You can see, too, that others help the industry, by urging the use of this home-produced benzole motor spirit on every possible occasion.

Gas at the Empire Exhibition

More Balloons

In the Gas Pavilion last week Miss Catherine Gordon, Home Adviser of the *Glasgow Evening News*, lectured on "Household Economy" to a large audience, stressing the advantages of gas in the home for cooking and heating purposes. The chair was taken by Mrs. Helen B. Shaw, formerly M.P. for Bothwell.

On Aug. 13 the second batch of balloons, numbering 20,000, in the balloon race organized by the British Gas Federation in conjunction with Glasgow Gas Department, was released by "Miss Jamaica," who has been chosen to visit the Exhibition as the representative of Jamaica's young womanhood. Miss Jamaica, after being crowned with a wreath of balloons by Mrs. J. W. McLusky, wife of Glasgow's Gas Engineer and General Manager, set off the balloons, the episode being filmed by Universal Talking News and Pathe's Gazette. A visit was thereafter paid to the Gas Pavilion, where the various appliances were inspected and Miss Jamaica was presented with shortbread, made in the Pavilion by Miss Cobb, demonstrator for the Parkinson Stove Company, and packed in an air-tight tin for safe transport to Jamaica.

The Coke Market - - - - -

In this Contribution, which is concluded from p. 360 of last week's issue, a Member of the Coke Oven Managers' Association, basing his comments on the three Articles entitled "Order or Chaos in the Coke Market" which appeared in the "JOURNAL" for June 1, 8, and 15, discusses the future of the coke market from the point of view of a coke oven manager.

The Only Real Criterion.

The only real criterion of the quality of a domestic or "gas" coke for most users is the way it burns. It is here that real divergencies occur which for various reasons cannot be smoothed out by the producers. Just as there is no standard coal, so there can be no standard coke. Every coal is different, and every coal produces a different quality of coke. These divergencies are accentuated by differences in carbonizing conditions, as determined by the type of plant, the width of the charge, blending, steaming, and the carbonizing temperature. The suggestion here made is that cokes should be classified into a limited number of grades by a standard combustibility test, the nature of which might well be put up to the British Standards Institution. The consumer would then know, for example, that if he bought coke in the first category—let us call it "open-grate coke No. 1"—he could expect it to burn in the open grate without special coke-burning appliances. The second category, "open-grate coke No. 2," would be suitable for the coke-burning grates for the open fire, but not generally for the coal-burning grates in which the previous grade could be used to replace coal. The third category might be "combustible industrial coke"—that is to say, it would be not quite suitable for any form of open grate, but very suitable for hot water boilers and other closed stoves. Any coke not coming under these categories would be classed as "industrial coke," "furnace coke," "hard coke," or by any other suitable name. It is known that the structure and composition of a coke are not the only things that influence combustibility, but the size of the particles has a considerable influence. The size, however, need not enter into this test, because it would be conducted on the particular grade or grades put forward by the producer as falling within the particular category. One producer's "open-grate coke No. 2" might be from 1 in. to 2 in.; another's might be from ¾ in. to 1¾ in.; another's might be from 1 in. to 1½ in. That would not matter provided all these cokes burnt in the standard test according to the prescribed conditions for that grade of coke.

The writer suggests that this is not a wild scheme for finding work for deserving chemists, but would be a very real assistance to the development of coke sales. The "JOURNAL" Report rightly insists upon the desirability of "improving" the quality of coke, though it is not made clear in what respects that improvement is necessary. So far as can be seen, however, there is no similar indication of the necessity for maintenance of constant quality. The importance of this factor cannot be over-emphasized. A consumer may get to know by experience how to use a particular coke, but if a delivery happens to be of a different quality—not necessarily better or worse, but different—the consumer is "all at sea," with the usual result that another customer is lost to coke. Coal is firmly established and if a particular delivery is not up to standard, the coal merchant is blamed and the consumer changes her dealer, or may change the "brand" of coal she buys. If one lot of coke falls below standard there is usually no suggestion of trying another "brand"—coke is coke, and one bad experience serves to condemn all coke.

Thus in its own interests the coke marketing organization should establish grades of coke which may not be greatly different in price—perhaps they may be all the same price, though probably the open-grate fuels would be more expensive than the industrial cokes—but essentially the purchaser must know that when she buys "open-grate coke No. 2" from any source, whether merchant or works, it will have certain defined combustion characteristics. The consumer aided by the seller will soon find which grade of coke will suit his or her appliances and methods.

Those who desire to place the coke trade on a sound footing are faced with a difficulty from the colliery angle with which the writer would have liked to see some real attempt to deal in the "JOURNAL" Report. That is the desire on the part of the colliery salesman, and of the colliery owner, to retain the house coal market. It is held that to replace house coal by coke made from the cheaper grades will seriously affect the economics of colliery operation. Nevertheless this change is already coming in that the increased demand for graded coal, as opposed to large coal, is causing collieries to break the large coal. It is worth quoting from one of the Papers to which reference has been made (Boon and Foxwell): "The achievements of fuel technology to-day are such that large coal has no higher real value than small coal given equal calorific value and equal ash content. All depends on suiting the appliance to the size of the coal available and *vice versa*. The day is fast approaching when . . . all coal will be sold on a calorific value basis—except perhaps coking coals and anthracites—so that the various sizes of coal will be very nearly the same price per ton. The house coal will decrease in price, but it represents only a small proportion of the output of most collieries, and the slack will increase in price. This fact must be taken into account when assessing the ultimate possibilities of carbonization." An instance was given in this Paper from the sizes produced in an individual colliery, which showed that if the rough slack at present produced was carbonized, its value at the ovens would be 15s. 4d. a ton, but that if the cost price of the various sizes became uniform the cost of the rough slack would be increased to 19s. a ton.

Hindering Smoke Abatement.

At first sight this may not have much to do with the market for coke. First impressions, however, are often erroneous. It is this insistence upon the house coal market that hinders many colliery owners from welcoming the idea of smoke abatement and of solid smokeless fuel. The obvious increase that will occur in the price of coal for carbonization if the large coal is displaced and the use of solid smokeless fuel is greatly extended, is a reason why the greatest efforts should be made to organize the marketing of coke upon sound lines, and in particular why efforts should be made to encourage people to pay more for coke than they do now. The "GAS JOURNAL" Report insists rightly that "the aim must be to sell more coke in a more effective way and in higher class markets."

The writer of the "JOURNAL" Report rightly says that the situation has been viewed with a bias towards the gas industry. The coke oven industry will not always agree with this bias. There is, for example, the passage which reads: "The question now to be faced is whether it is good policy for the coking industry to dump low-priced coke in the general market during the slump periods, and expect the gas industry to maintain a profitable market steadily satisfied when things happen to be flourishing in the steel world, so that the old cut-throat methods may be resumed." The gas industry may be assured that there is no desire among responsible coke oven technologists to behave in this way. It is admitted that this has been the practice in the past; it must be admitted that in certain quarters it will be the practice again in the future, but purely as a means for preventing the ovens from being allowed to become cold. The cost of mining slack coal and the increasing demand for it are such that it cannot properly be charged to the coke ovens at the prices which alone could permit us to "dump low-priced coke." The difficulty to-day is rather that the gas coke prices are at too low a level to permit proper working arrangements. The colliery owner as a species has many faults, but among them is not the desire to lose money. The difficulty here is the two voices with which the colliery industry speaks. Those who have not coke ovens reduce the price of their house coal and make every effort to keep the house coal market. Those

who possess coke ovens are generally anxious to see the price of coke kept up.

"Voice" and Sales.

The coke oven industry will lift its eyebrows to read that "the gas industry sells twice as much coke in the general home market as do the coke ovens and it should have a proportionate voice in deciding how that market is to be served in the future." The coke oven industry only sells less coke because the gas industry has been longer in the game. Its potential output is unlimited; that of the gas industry is limited by the demand for gas. Given a few years of national effort in the development of coke sales, and the demand would far outstrip the resources of the gas industry to take care of it. The coke oven industry would then be the dominant partner, and on this argument would call the tune. It is a very dangerous argument that "voice" should vary directly with sales. The two sides should work in harmonious co-operation, both being allowed a certain liberty of independent action.

The preservation of balanced markets is another debatable issue. There can be no debate that "as the oven coke producers secure new markets they must keep them in good times as well as in bad." There is every reason to suppose that with the great increase that has occurred in the carbonizing capacity of steelworks plants the temptation to desert the general market when the furnace coke market is good has been removed. More than the removal of temptation is necessary, however, and there must be proper working arrangements to supply sufficient coke for the general market at all times. This, however, introduces a practical problem for the coke maker. He cannot store unlimited quantities and he must keep his ovens going. What happens when demand falls off considerably and coke cannot be sold? The gas industry has its methods of meeting such a situation. It can heat the retorts by gas—as has been done in more than one instance last winter—and it can make water-gas. But the "JOURNAL" Report asks for the imposition of a "simple" condition "that the market must first absorb the locally produced gas coke (to avoid its displacement by imported coke)." This condition is anything but simple in practice. The fact is surely that both parties must make sacrifices when the weather or other impressed force causes the marketing organization to break down. The coke ovens must reduce output to the limit necessary to clear the colliery of slack or to keep the ovens warm, and the gas industry must do its part by using its own coke. Admittedly, under the heading "A Suggestion from Scotland" the "JOURNAL" Report suggests the use of water gas with marketing of oven coke by the gas industry so that the production of gas coke would be avoided, but the general suggestion appears to be that the gas industry should toss with a two-headed coin.

"Dumping."

Just another word about "dumping." The coal trade has followed with considerable interest the recent work on the development of a new gas-making process, which seems to have caused the University of Leeds and the Research Committee of The Institution of Gas Engineers to go all "high pressure." It has noted the Paper read by the General Manager of the South Metropolitan Gas Company at the Institution meeting and has been struck by the calculation of costs on the thermal basis. It is particularly interested to learn that in this balance-sheet there is shown a loss of 0·97d. on each therm of coke produced, which has to be carried by the gas, and that even with this loss the coke bears none of the capital charges. The question is being asked why the gas industry should talk about "dumping" when it is itself dumping coke at unremunerative prices, but subsidized by other products, onto the house coal market?

The present writer deplores this attitude because he is essentially a coke enthusiast and has a profound belief in smokeless fuels of every kind. But it is difficult to see how to answer the question.

Finally, a word of commendation must be said in support of the view expressed in the "JOURNAL" Report that there must be a new conception of the relationship between the collieries and the coke ovens. The organization of the colliery industry with its mining or non-technical directors, its colliery agents who are essentially mining experts, its mine managers, its coal salesmen, and the like is wholly unsuited to deal with a chemical industry such as that of by-product coking. This industry demands men with a wide experience in general fuel production and utilization by carbonization and in the chemical industry. It must be alive to make use of the discoveries of chemists in regard to the utilization of the products produced from coal. If it had been left to the technical men of the industry, in collaboration with their Boards of Directors, and unencumbered by the dead weight of purely "coal" men upon the administrative and executive staff, a proper agreement for a national coke marketing organization would have been in being long ago. There can be no doubt that it is true that the coking industry broke away from the control of these people and was put upon a sound basis as a semi-independent coal processing industry. The coke ovens situated at steel works are, of course, under the control of the steel-works management, and this is natural since the coke ovens are an integral part of a metallurgical whole. The same thing is not true of coke ovens situated at collieries. Unfortunately, a long and bitter fight will be needed to persuade the colliery director that the colliery agent is not the best possible person to take charge of a chemical works. What would have been the position of the gas industry to-day if the colliery agent who produces the coal and over-sees the mine manager dictated policy and practice to the gas engineer?

"Motor Benzole, Its Production and Use"*

Reviewed by W. G. Adam

In his foreword to this edition the President of the National Benzole Association, Sir David Milne-Watson, writes: "The revised edition of 'Motor Benzole, Its Production and Use,' may be accepted as the standard work of reference on benzole, up-to-date and reliable." Those who, in future, have occasion to consult this volume, should agree with this statement.

The first edition was a natural complement to the Reports of the Joint Benzole Research Committee of the National Benzole Association and the University of Leeds, and the new edition again includes an extensive bibliography covering all branches of the subject.

Except for a portrait of Faraday, reproduced as frontispiece, and a slight decrease in the size of type which permits a full page of text to contain five more lines of print than in the first edition, the appearance of the new edition is similar to the old. The contents have, however, been very greatly enlarged in scope and in detail. The Authors attribute the need for this to the many developments that have taken place since the publishing of the first edition with regard to both the internal combustion engine and the production of suitable fuels for it, concurrently with new phases in the manufacture of motor benzole. Consequently a new chapter is devoted to the processes now practised in the petroleum industry whereby benzole is obtained from natural gases and gases which result from the cracking of petroleum, another to the production of aromatic hydrocarbons by cracking and hydrogenation, and a third to the determination of anti-knock value of benzole blends and other motor fuels. The remainder of the 20 chapters shows a thoroughness of revision that in many cases has entailed rewriting and rearrangement of large sections.

When it is realized that the period since the first edition was published has seen the introduction of the new specification for motor benzoles stabilized by methods other than acid washing and the changes in refinery procedure that have resulted from this, the complexities involved in revision begin to make themselves clear. Yet it does not appear that any single process or aspect which has been published and which has a bearing on the recovery, refining, distribution, and use of motor benzole has escaped its appropriate niche in this comprehensive volume.

Any attempt to summarize the matter of so complete a work in a brief notice could only result in undue stress being laid upon the items selected.

The work of bringing up to date the very large number of statistics tabulated in the book, selecting the diagrams and illustrations, and the revision of the really useful compendium of tables and data, has resulted in a volume of reference which should be in the possession of all chemical engineers concerned with the raw and refined materials of the motor fuel industry.

The indexes of Names and Subjects, the space occupied by which has been respectively doubled and trebled in the new edition, complete a book which is compiled from sources whose authority is of the highest.

* Second Edition. By W. H. Hoffert, M.A., B.Sc., F.I.C., and G. Claxton, M.Sc. Published by the National Benzole Association, London. Price £2 2s.

Trade Notes

The "Ideal" Water Softener.

It is common knowledge that, in districts where the water is hard—and there are many—gas undertakings are confronted with the difficulty of scale formation in water heaters, and this difficulty is all the more severe, of course, in the case of boiling water appliances. Maintenance of water heaters in hard water districts is a consideration to which much thought has to be given. Hence the interest which attaches to a relatively inexpensive water softener for use in combination with sink heaters and boiling water appliances. From our illustrations it will be seen that the softener is neat and unobtrusive. From the gas undertaking's point of view, the advantages of softened water are apparent, and there must be many housewives desirous of availing themselves of a supply on tap of soft hot water, with the consequent and considerable saving in soap and in time and labour in washing. Both gas undertaking and consumer stand to benefit by its installation.

Showing "Ideal" Water Softeners in combination with Sink Water Heaters.

The softener—it is made in two sizes—is of the base exchange type specially designed to minimize back pressure and not interfere with the working of the valve on the heater. Its attachment to sink water boiler is simplicity itself. Regeneration is effected by common salt—with the smaller size softener five to seven days, with the larger model every seven to ten days. Already several prominent makers of gas water-heating appliances have expressed their approval of the softener, and doubtless gas undertakings will want to know more about it. The manufacturers are Ideal Water Softeners, 58, Queen's Road, Watford, who inform us that softeners with connexions suitable for attachment to the Radiation sink heater, Parkinson sink heater type 81, the Ascot sink heater type R.12 and the Ascot R.S2 heater, the Maxol heater type MX/33, the Aintree and Sunlot heaters, and Jacksons and Stott boilers are available.

Combating Corrosion of Gas Pipes.

The question of corrosion and electrolytic breakdown is a very vexed problem; and in this connexion Messrs. Clough (Croydon), Ltd., bring to our notice a rubber wax compound made by them under the name of "Suprax." This compound consists of the best quality rubber mixed with non-corrosive waxes and fillers worked together into a homogeneous mass, extruded on to the pipes or cables, having no seams or joints whatsoever. Although "Suprax" has a rubber base no vulcanization is necessary, therefore there is no free sulphur, which under electrolytic action in a damp or corrosive situation itself becomes a corrosive agent. We are informed that "Suprax," besides being waterproof and acid resisting, has a very high dielectric strength.

A New Gas Fire Catalogue.

The new season's gas fire catalogue just issued by R. & A. Main, Ltd., provides not only a comprehensive book of reference in a handy form but also an excellent example of how a catalogue may be set out to combine practical utility with attractive appearance.

Chief interest attaches, perhaps, to the "colour chart" included in the form of a folding plate. This embraces, in actual colours, all the standard finishes which are applied to Main fires—23 in all, comprising super-grade, duo-tone, high-grade, and coloured paint finishes. At intervals, also, throughout the publication are full-page representations in actual colours of different gas fire models in pleasing and appropriate settings, to show how Main fires can harmonize with a wide variety of different surrounds or decoration schemes.

After a useful table to assist in choosing the correct size of fire for rooms of varying dimensions, together with gas consumption figures, the catalogue goes on to deal in turn with the many well-known Main fires, giving illustrations and full specifications of each. There follow particulars of the firm's portable models, together with the prepayment time-clock control for use therewith. The latter is particularly suitable for hotel use. Other sections are devoted to gas radiators and small fittings such as plug-in connectors, boiling rings, and gas poker.

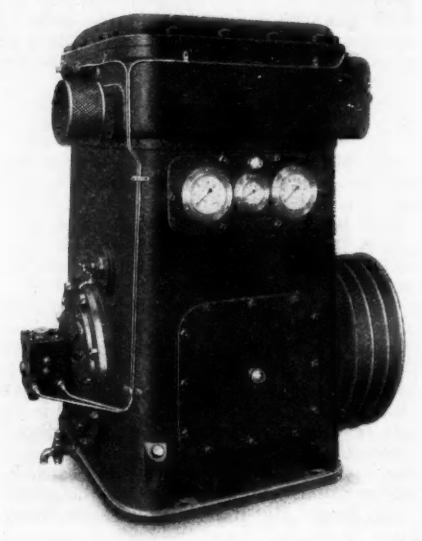
Altogether, this catalogue provides material from which to select a full space-heating service for any home and offers a variety of designs and finishes to satisfy the most critical purchaser.

Browett-Lindley Monobloc Compressor.

The new compressor illustrated here has been designed to meet the demand for smaller outputs than those provided by the standard Browett-Lindley range and has been tested over a period of more than two years before being placed on the market. Special attention has been directed to the object of providing an extremely efficient machine in a very compact form. Like the larger Browett-Lindley compressors, the unit is of the crosshead type, in which the oil supply to the cylinders can be controlled within fine limits. This ensures clean outlet air, a most important feature for such applications as paint spraying, enamelling, food manufacture, &c.

Every working part is contained within the frame of the machine, including the flywheel. This renders the compressor particularly suitable for use in dirty or dusty atmospheres.

Having in mind the greatest possible degree of reliability, all bearing surfaces were made exceptionally large. An interesting feature is that the crankshaft flywheel forging is mounted on large taper rollers. An efficient and simple gear pump is mounted at the end of the crankshaft for the purpose of supplying oil under pressure to all working parts. A separate mechanical lubricator for the cylinders is mounted externally. By this means the oil supply can be carefully controlled. An Auto-Klean oil strainer is provided which can be cleaned by a turn of the handle while running, without danger of grit reaching the bearings.



Browett-Lindley Monobloc Compressor.

Of simple design, built into the cylinder block, the intercooler unit is easily accessible for cleaning by removal of a side cover. The vales, pistons, piston rods, connecting rods, and inlet control governor are all accessible from the top by removal of the covers

only. The motion work can be reached by removal of large doors at front and rear.

An efficient filter is provided to safeguard the air supply and prevent excessive wear. This is also easily removable for cleaning. The drive can be by Vee rope, chain, belt, or direct coupling. The valves are of the automatic plate type with small lift giving negligible wear. The valve chambers and covers are watercooled, a feature which increases overall efficiency and prevents the danger of overheating.

Time Control.

The economies effected by the use of clock controllers for public lighting are already well known to all responsible for the lighting of our streets.

The development of the industrial load in the Gas Industry has now assumed important dimensions, and the time control of shop lighting, space heating, and general industrial appliances will frequently effect economies which will pay for the controller in a very short time.

For domestic purposes, with the complete heating of a house so frequently carried out to-day by the cheap gas offered by a two-part tariff, the time controller again has its very definite use. The combination of time and thermostatic control opens up very big possibilities, as regards both precision of temperature and maximum economy of fuel, and it is a technique that must be of interest to all concerned with the distribution of gas.

The "London" controller, made by the Gas Meter Company, Ltd., may be obtained fitted with a selective attachment introducing not only the opening and closing of a valve at predetermined hours but the further advantage of eliminating any day or days of the week when it is desired that all operations shall be suspended.

Apart from the "London," the Gas Meter Company also make the "Kingsland" controller, which is a general-purpose apparatus and somewhat cheaper. Both controllers are suitable for all types of ignition.

The Company have been making controllers for many years, and it has been their constant view that nothing but the finest clock movement is good enough for their controllers, on the accurate functioning of which so many customers in the Gas Industry have pinned their faith.

Aluminium Tubes and Pipes.

A publication recently issued by the British Aluminium Company, Ltd., contains a wealth of useful information on the subject of aluminium tubes and pipes. After tables relative to tolerances, tensile strength, of varying thicknesses and diameters of tube, there is a section devoted tn the working of aluminium tubes, including swaging, bending, welding, and jointing. For thin-walled tubes, where a screwed union is impossible, a number of special jointing systems are available; these are shown by means of diagrams. The remainder of the publication is devoted to tables of tube sizes and weights, bends and sockets, and details of internal pressures.

New Nautilus Flue Block.

Chief among the items of interest on the Nautilus Stand at the Building Exhibition, Sept. 16 to Oct. 1, will be the new Nautilus flue block which makes its first appearance. Improved features now enable the insides of the flues to be kept clear of mortar fangs. New types of block have been added that greatly increase the scope of usefulness of Nautilus flues.

Also on the stand will be a range of plaques of modern design in marble, "Merible"—an inexpensive Welsh slate product finished in a range of attractive colours—and cast-iron, suitable for the Panella gas fire. Two recent additions to the Panella series of fires will be shown, the "K" and the "L," in which the fire and plaque are designed as one unit.

Nautilus domestic coke boilers, in porcelain enamelled finishes, will be displayed alongside enamelled "New World" gas cookers (Radiation Limited) to illustrate how easily they fit into an ordinary kitchen recess even when there is little room to spare.

To complete the display, there will be a selection of instantaneous water heaters, including the new Radiation types.

Birmingham Office for Head, Wrightson & Co., Ltd.

Owing to the increasing demand for practical co-operation on engineering problems, Head, Wrightson & Co., Ltd., of Thornaby-on-Tees have opened a Birmingham Branch Office at Central House, 75, New Street. Telephone No.: Midland 5642. Mr. L. J. Mogridge has been appointed Manager.

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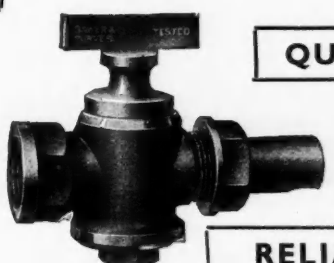

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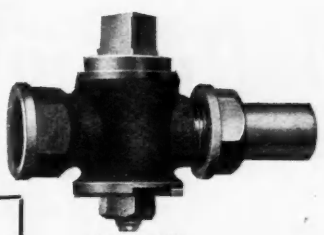
RELIABILITY



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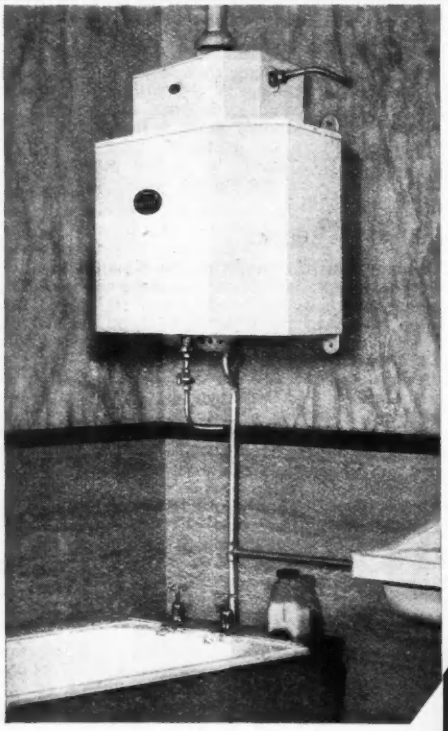
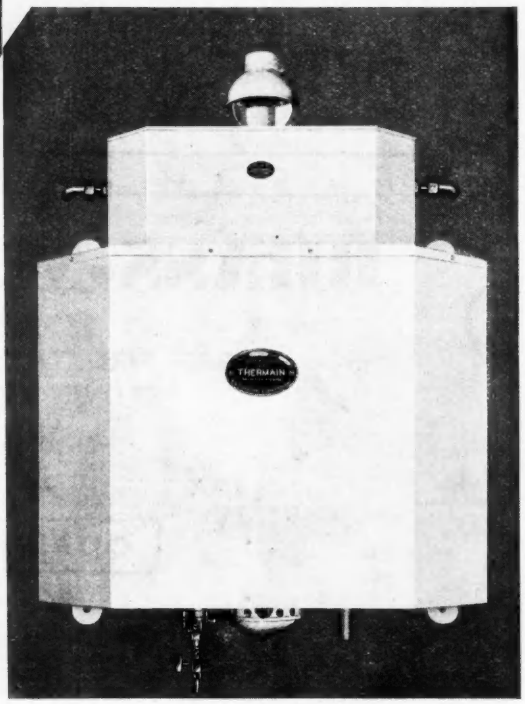


For Hot Water at the Bath, the Lavatory Basin, and the Scullery Sink

- Rectangular in shape, and artistically finished in china white enamel.
- Capacity—14 gallons. Rating—10,000 B.Th.U. per hour (20 cu. ft of 500 B.Th.U. Gas).
- Combustion Chamber — Non condensing, with protecting cover over burners.
- Water inflow governed by ball valve. Water temperature and gas rate governed automatically by Thermostat.
- An Integral Anti-down Draught Baffler is provided at the top of the Heater.



- This heater conforms to the requirements of the British Standard Specification for the Combustion Testing of Domestic Gas Appliances.

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Markets and Manufactures

Current Sales of Gas Products

The London Market

LONDON, *Aug.* 15.

There is little of interest to record in the prices of Tar Products, to-day's values being as follows:

Pitch nominal at about 33s. per ton f.o.b.
Creosote, about 4¾d.
Refined tar, 3¾d.
Pure toluole, 2s. 1d. to 2s. 2d.
Pure benzole, about 1s. 9d.
95/160 solvent naphtha, 1s. 7d.
90/160 pyridine, about 10s.
All per gallon naked at makers' works.

The Provinces

Aug. 15.

Crude Gas-Works Tar, 15s. to 20s.

To avoid misunderstanding, it is necessary to state that the above price is not claimed to represent a market value. It is a price worked out from week to week upon a system which has been used for many years as a basis for the fixing of certain contracts for crude tar of varying qualities in different areas.

The average prices of gas-works products during the week were: Pitch—East Coast, 31s. to 32s. f.o.b. West Coast—Manchester, Liverpool, Clyde, 31s. to 32s.* Toluole, naked, North 1s. 7½d. to 1s. 9d. Coal tar, crude naphtha, in bulk, North, 7¾d. to 8¼d. Solvent naphtha, naked, North, 1s. 4½d. to 1s. 5d. Heavy naphtha, North, 1s. 3d. to 1s. 3¼d. Creosote, *ex* works, in bulk, North, liquid and salty, 4¾d. to 4⅞d.; low gravity, 4¼d. to 4¾d. Carbolic acid, 60's, 1s. 9d. to 2s. Naphthalene, £13 10s. to £16. Salts, 80s. to 85s., bags included. Anthracene, "A" quality, 4¼d. to 4¾d. per minimum 40% purely nominal; "B" quality unsalable. Heavy oil: Unfiltered heavy tar oil, min. gr. 1.080, 4¾d. to 4⅞d.; filtered heavy tar oil, min. gr. 1.080, 5¼d. to 5¾d.; heavy tar oil, gr. less than 1.080, 4¼d. to 4¾d.

* All prices for pitch are now quoted on the basis of f.o.b. In order to arrive at the f.a.s. value at any port it will be necessary to deduct the loading costs and the tolls whatever they may be.

Scotland

GLASGOW, *Aug.* 13.

Business is still slow, although there is evidence of more interest being taken in all products.

Crude gas-works tar.—Actual value is about 37s. to 38s. per ton *ex* works in bulk.

Pitch.—Plentiful supplies are available at round 25s. per ton f.o.b. for export and 23s. per ton *ex* works in bulk for home trade.

Refined tar.—A steady throughput is maintained at 3¾d. to 4d. per gallon in the home market. Export business is rather dull at 3d. to 3⅛d. per gallon in buyers' packages at makers' works.

Creosote oil.—Only a moderate volume of new business is being placed at the following prices: Specification oil, 4¾d. to 5d. per gallon; low gravity, 5½d. to 6d. per gallon; neutral oil, 5d. to 5¼d. per gallon; all *ex* works in bulk.

Cresylic acid.—Little or no new business is being offered and prices are nominal as under: Pale, 97/99%, 1s. 6d. to 1s. 8d. per gallon; dark, 97/99%, 1s. 4d. to 1s. 6d. per gallon; and pale, 99/100%, 1s. 9d. to 2s. per gallon; all according to quality *ex* works in buyers' packages.

Crude naphtha is changing hands at 5½d. to 6d. per gallon *ex* works in bulk, according to quality.

Solvent naphtha.—90/160 grade is 1s. 4d. to 1s. 4½d. per gallon and 90/190 heavy naphtha is 1s. 1d. to 1s. 1½d. per gallon.

Motor benzole is well looked after at 1s. 4d. to 1s. 4½d. per gallon.

Pyridine is easier with 90/160 grade at 8s. 6d. to 9s. per gallon and 90/140 grade at 9s. 6d. to 10s. per gallon.

Benzole Prices

These are considered to be the market prices for benzole at the present time:

	s.	d.		s.	d.	
Crude benzole..	0	9½	to	0	10	per gall. at works
Motor „ ..	1	3	„	1	3½	„ „ „
90% „ ..	1	4	„	1	4½	„ „ „
Pure „ ..	1	8	„	1	8½	„ „ „

Contracts Advertised To-Day

Coal.

Stockton-on-Tees Gas Department. [p. 430.]

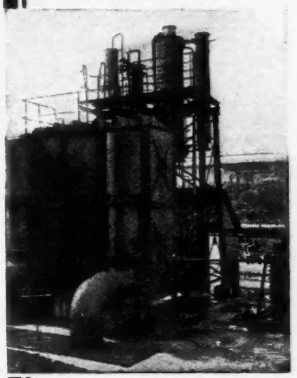
Gasholder.

Coalville Gas Department. [p. 430.]

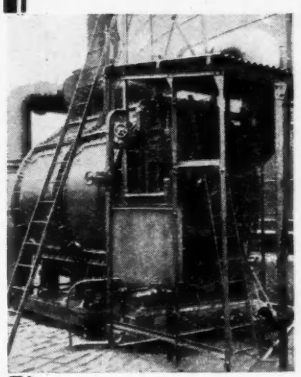
Port Talbot Gas Department

The revenue account of the Port Talbot Gas Department showed a gross profit of £13,857. After providing for loan charges, interest, and income-tax, the net profit was £2,361. Of this sum £1,367 was spent on capital work out of revenue, and the balance transferred to the appropriation account, bringing this up to £15,695. During the year the renewal of Cwmavon gasholder was carried out and the charge borne direct from revenue. The gas sold was 218,448,000 cu.ft., being an increase of 15,052,000 cu.ft., or 7·4% over the previous year. The gas made was 232,464,000 cu.ft., being an increase of 12,005,000 cu.ft., or 5·4% over the previous year. The gas unaccounted for was reduced from 6·8% to 5·0%. New consumers to the number of 245 were connected during the year, bringing the total to 9,359. Despite an increase of 3s. 6d. per ton in the price of coal, it was not necessary to increase the price of gas. New showrooms, offices, and central distribution premises were opened during the year, enabling an improved service to be given to consumers. Coke grading and screening plants, and benzole recovery plant were completed and brought into commission during the year.

These are "Permac" metal-to-metal Joints!



"Permac" Joints in a Gas Works.



"Permac" Joints in a Gas Works

Wouldn't it pay you to use it?

Ever since 1913 "PERMAC," the original Metal-to-Metal Jointing, has been holding up difficult joints like these in important Gas Works and on Coke Oven Plants all over the world. Equally suitable for any joint—steam, water, gas, oil — screw pipe or flange.

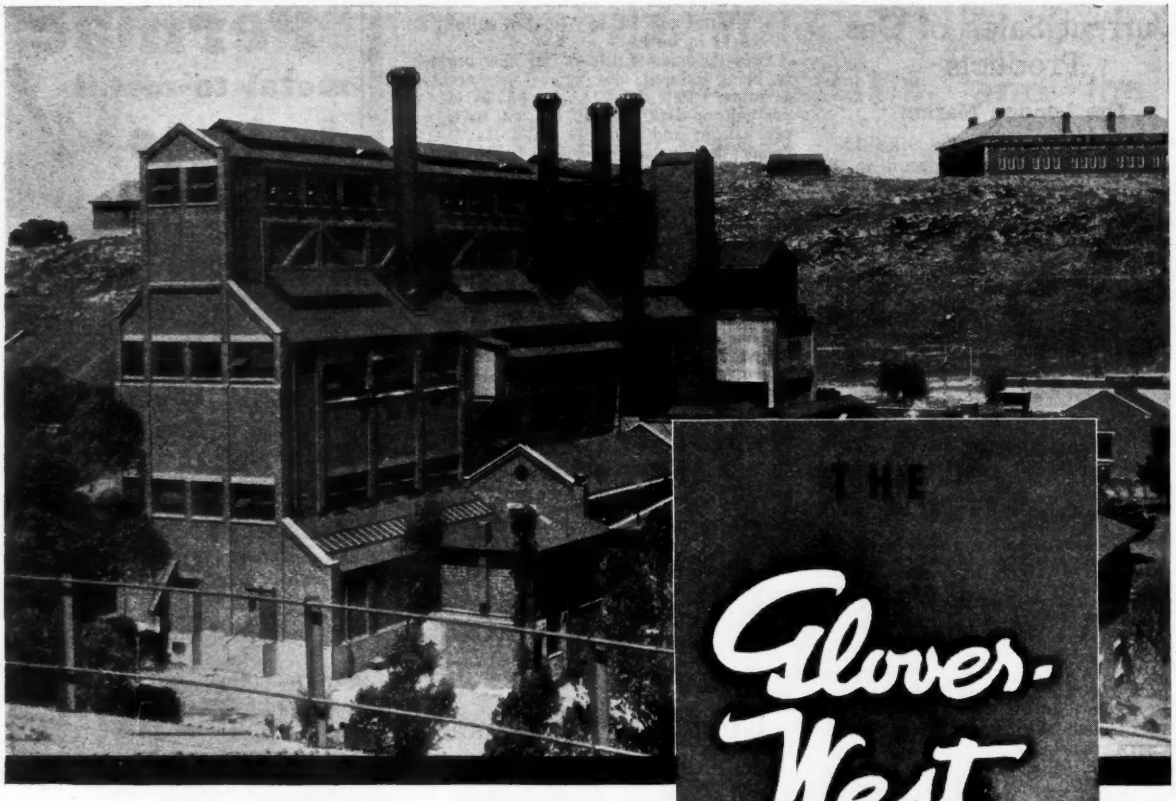
Send for particulars

Permac
METAL-TO-METAL JOINTING MATERIAL

THOMAS & BISHOP LTD.
37, Tabernacle St.
LONDON, E.C. 2

Telephone: Clerkenwell 3351 (2 lines)

● CARBONIZATION IN VERTICAL RETORTS



The modern Glover-West vertical retort plant has behind it the accumulated experience of 64 years constant research and development for the advancement of gas production methods the world over.

● *423 plants have been built or are on order for 223 Gas Undertakings in 24 countries.*

The picture shows the three installations of Glover-West vertical retorts at Johannesburg City Council's Cottesloe gas works. The carbonising unit of the complete modern gasworks ordered for Johannesburg from this company in 1926 has been trebled to meet the rapid growth of demand. The latest extension put to work in 1937 is nearest the camera.

●

WEST'S GAS IMPROVEMENT CO. LTD.,

MANCHESTER: Albion Ironworks, Miles Platting ■ LONDON: Columbia House, Aldwych, W.C.2

GAS STOCKS AND SHARES

Business continued quiet on the Stock Exchange last week though on the whole prices remained fairly steady. Some irregularity was noticeable at one time in gilt-edged stocks, but the tone became stronger at the close, and quotations finished above the lowest of the week. A good feature was the better appearance of the home rail market, which after several very dull weeks at last began to receive support and several prices showed signs of moving up. Industrials made as good a show as any and prices were well maintained, the feature being a recovery in textile issues. The more speculative mining shares were active, but oils and rubbers in the absence of support produced few changes of interest.

A heavier volume of business was recorded in the Gas market, though this may be partly attributable to the fact that a large number of ordinary and preference stocks became *ex div.* on Monday of last week and intending sellers had preferred to take the dividend before parting with their holdings. Apart from these seasonal changes quotations remained steady, the only alterations being a gain of a point in Bournemouth 7% maximum and a drop of 2 in Imperial Continental.

Among recent half-yearly, or interim, dividend announcements appear the following: Chester 2½%, Derby 3%, Eastbourne "A" 3¾%, "B" 3%, Lea Bridge 4¼%, Maidstone 4%, North Middlesex 3¾%, Portsmouth and Gosport 4¼%, Romford 4%, Sheffield and District 3¼%, South-Eastern Gas Corporation 3%, all of which are at the same rates as a year ago. The Hornsey Company is distributing at a slightly reduced rate than for the corresponding period—viz., £2 16s. 3d.% against 3%.

Parcels of nearly all the leading ordinary and preference issues are available at the present time, but the debenture list is very limited. A good line in the latter is that of £2,500 Croydon 5% perpetual debenture which is on offer at 119 to yield £4 4s.%. There is also £5,000 Sheffield 4½% redeemable 1966 available at 110½, at which price the gross yield works out at £4 1s.% or, after allowing for redemption, £3 17s. 6d.%.

Official Quotations on the London Stock Exchange

Issue. £	When ex-Dividend.	Dividends. Prev. Hf. Yr. % p.a.	Dividends. Last Hf. Yr. % p.a.	NAME.	Quotations Aug. 12.	Rise or Fall on Week.
1,767,439	Mar. 7	8	8	Alliance & Dublin Ord. ...	145—155	...
374,000	June 20	4	4	Do. 4 p.c. Deb. ...	93—108	...
734,733	May 9	5	5	Asscd. Gas & Water U'd'cts Ord.	17/6—19/6	...
500,000	,,	4½	4½	Do. 4½ p.c. Red. Cum. Pref.	19/—21/—	...
444,389	,,	§—/4	4	Do. 4 p.c. Red. Cum. Pref.	19/—20/—	...
296,523	,,	4	4	Do. 4 p.c. Irred. Cum. Pref.	16/—18/—	...
500,000	Mar. 7	3½	3½	Do. 3½ p.c. Red. Deb. ...	94—99	...
558,890	Feb. 21	7	7	Barnet Ord. 7 p.c.	158—163	...
300,000	Apl. 4	1/4½	1/9¾	Bombay, Ltd.	24/6—26/6	...
179,915	Feb. 21	9½	9½	Bournemouth sliding scale ...	195—205	...
590,407	,,	7	7	Do. 7 p.c. max. ...	158—163	+1
493,960	,,	6	6	Do. 6 p.c. Pref. ...	134—139	...
50,000	June 20	3	3	Do. 3 p.c. Deb. ...	78—83	...
262,025	,,	4	4	Do. 4 p.c. Deb. ...	98—103	...
335,000	,,	5	5	Do. 5 p.c. Deb. ...	115—120	...
357,900	Aug. 8	7½	7½	Brighton, &c., 6 p.c. Con. ...	142—147*	−3
649,955	,,	6½	6½	Do. 5 p.c. Con. ...	126—131*	−2
205,500	,,	6	6	Do. 6 p.c. 'B' Pref.	125—130*	−2
855,000	Mar. 7	7	8	British Ord.	138—143	...
100,000	June 3	7	7	Do. 7 p.c. Pref.	140—145	...
350,000	,,	5½	5½	Do. 5½ p.c. 'B' Cum. Pref.	110—115	...
120,000	,,	4	4	Do. 4 p.c. Red. Deb. ...	94—99	...
450,000	,,	5	5	Do. 5 p.c. Red. Deb. ...	102—107	...
450,000	,,	3½	3½	Do. 3½ p.c. Red. Deb. ...	94—99	...
100,000	22 May'33	6	4	Cape Town, Ltd.	1—2	...
100,000	6 Nov.'33	4½	4½	Do. 4½ p.c. Pref. ...	1½—3½	...
150,000	June 20	4½	4½	Do. 4½ p.c. Deb. ...	60—70	...
626,860	July 18	6	6	Cardiff Con. Ord.	118—123	...
237,860	June 3	5	5	Do. 5 p.c. Red. Deb.	105—110	...
98,936	Mar. 21	2/—	2/—	Colombo Ord....	1⅞—1⅞	...
24,510	,,	1/4½	1/4½	Do. 7 p.c. Pref.... ...	23/—25/—	...
739,453	Mar. 21	−/11·48	−/11·48	Colonial Gas Assn. Ltd. Ord.	16/6—18/6	...
296,144	,,	1/3·30	1/3·30	Do. 8 p.c. Pref. ...	23/—25/—	...
1,775,005	Aug. 8	5	5	Commercial Ord.	79—84*	−2
140,000	,,	—	13/4§	Do. 4 p.c. Red. Pref.	97—100*	−2
620,000	June 3	3	3	Do. 3 p.c. Deb. ...	72—77	...
286,344	Feb. 7	5	5	Do. 5 p.c. Deb. ...	114—119	...
200,000	—	—	—	Do. 3¾ p.c. Red. Deb.	99—102	...
807,560	Aug. 8	7	7	Croydon sliding scale ...	135—140*	−2
644,590	,,	5	5	Do. max. div. ...	105—110*	−2
620,385	June 20	5	5	Do. 5 p.c. Deb. ...	115—120	+2
239,000	Aug. 8	5	5	East Hull Ord. 5 p.c. ...	94—99*	−2
185,355	Aug. 8	6	6	East Surrey Ord. 5 p.c. ...	116—121*	−2
176,211	June 3	5	5	Do. 5 p.c. Deb. ...	115—120	...
250,000	July 4	4	8	Gas Consolidation Ord. 'B' ...	20/—21/—	...
250,000	May 9	4	4	Do. 4 p.c. Red. Cum. Pref.	17/6—19/6	...
19,223,324	Aug. 8	5⅔	5⅔	Gas Light & Coke Ord. ...	23/6—24/6*a	−−/6
2,600,000	,,	3½	3½	Do. 3½ p.c. max. ...	79—82*	−1
4,477,106	,,	4	4	Do. 4 p.c. Con. Pref....	99—102*	−2
2,993,000	July 4	—	3½	Do. 3½ p.c. Red. Pref. ...	100—103	...
8,602,497	May 23	3	3	Do. 3 p.c. Con. Deb....	82—84	...
3,642,770	,,	5	5	Do. 5 p.c. Red. Deb....	111—114	...
3,500,000	,,	4½	4½	Do. 4½ p.c. Red. Deb....	109—112	...
700,000	Mar. 7	3½	3½	Do. 3½ p.c. Red. Deb....	97½—100½	...
270,466	Feb. 21	6	6	Harrogate New Cons. ...	118—123	...
157,500	Mar. 21	1/2⅔	1/—‡	Hong Kong and China Ord....	¾—1	...
213,200	Aug. 8	6	5⅔	Hornsey Con. 3½ p.c. ...	98—108*	−2
5,600,000	May 9	8	12	Imperial Continental Cap ...	120—125	−2
223,130	July 18	3½	3½	Do. 3½ p.c. Red. Deb....	87—92	...
285,242	Aug. 8	8½	8½	Lea Bridge 5 p.c. Ord. ...	164—169*	−3
11,751	Feb. 21	8	10	Maidstone 5 p.c. Cap. ...	175—185	...
63,480	June 20	3	3	Do. 3 p.c. Deb.... ...	70—75	...
75,000	May 23	†10	†10	Malta & Mediterranean Metropolitan (of Melbourne)	137—142	...
				5½ p.c. Red. Deb.	99—102	...
392,000	Apl. 1	5½	5½	M.S. Utility 'C' Cons. ...	99—104	...
231,977	Feb. 21	5	5	Do. 4 p.c. Cons. Pref.	97—102	...
968,658	Feb. 21	4	4			

Issue. £	When ex-Dividend.	Dividends. Prev. Hf. Yr. % p.a.	Dividends. Last Hf. Yr. % p.a.	NAME.	Quotations Aug. 12.	Rise or Fall on Week.
360,075	June 20	4	4	M.S. Utility 4 p.c. Deb. ...	97—102	...
148,955	,,	5	5	Do. 5 p.c. Deb. ...	113—118	...
675,000	May 9	†6	†6	Montevideo, Ltd.	73—78	...
250,000	Aug. 8	7½	7½	North Middlesex 6 p.c. Con.	142—147*	−3
396,160	Aug. 8	5	5	Northampton 5 p.c. max. ...	105—110*	−2
300,000	Apl. 25	†9	†7	Oriental, Ltd.	147—152	...
468,537	June 3	8	8	Plymouth & Stonehouse 5 p.c.	150—155	...
621,667	Aug. 8	8½	8½	Portsmouth & Gosport Cons.	157—162*	−3
241,446	,,	5	5	Do. 5 p.c. max. ...	100—105*	−2
73,350	,,	5	5	Do. 5 p.c. Pref. ...	107—112*	−1
75,000	,,	4	4	Do. 4 p.c. Pref. ...	94—99*	−1
114,000	Aug. 8	5	5	Preston 5 p.c. Pref.	104—109*	−2
247,966	June 3	4	4	Primitiva 4 p.c. Cons. Deb. ...	98—103	...
625,959	July 18	4	4	Do. 4 p.c. Red. Deb. ...	94—99	...
15,000	Mar. 21	6	6	San Paulo 6 p.c. Cum. Pref. ...	8½—9½	...
441,275	Apl. 25	1/1½	1/1½	Severn Val. Gas Cor. Ld. Ord.	21/—23/—	...
460,810	Mar. 21	−/10½	−/10½	,, ,, 4½ p.c. Cum. Pref.	19/6—21/6	...
133,201	Feb. 7	8½	5	Shrewsbury 5 p.c. Ord. ...	128—133	...
9,000	June 3	4	‡4	South African Ord.	4½—5½	...
1,371,752	Apl. 25	1/2⅔	1/2⅔	South East'n Gas Cn. Ld. Ord.	22/—24/—	...
871,636	Mar. 7	−/10½	−/10½	Do. 4½ p.c. Red. Cum. Pref.	20/6—22/6	...
498,818	,,	4	4	Do. 4 p.c. Cum. Pref. ...	18/—20/—	...
450,000	Aug. 8	4	4	Do. 4 p.c. Deb.	99—102*	−2
150,000	,,	3½	3½	Do. 3½ p.c. Red. Deb. ...	94—97*	−1
6,709,895	Aug. 8	6	5	South Met. Ord.	105—108*	−1
1,135,812	,,	6	6	Do. 6 p.c. Irred. Pref. ...	128—133*	−2
850,000	,,	4	4	Do. 4 p.c. Irred. Pref. ...	96—99*	−1
1,895,445	June 20	3	3	Do. 3 p.c. Deb.	77½—80½	...
1,000,000	July 4	5	5	Do. 5 p.c. Red. Deb. ...	109—112	...
600,000	,,	—	§31/—	Do. 3¾ p.c. Red. Deb. ...	99—102	...
1,543,795	Aug 8	6	6	South Suburban Ord. 5 p.c. ...	116—121*	−2
512,825	,,	5	5	Do. 5 p.c. Pref.... ...	108—113*	−2
500,000	,,	4	4	Do. 4 p.c. Pref.... ...	94—99*	−1
250,000	,,	3¾	3¾	Do. 3¾ p.c. Red. Pref. ...	97—100*	−1
888,587	June 3	5	5	Do. 5 p.c. Deb.	115—120	...
250,000	,,	4	4	Do. 4 p.c. Deb.... ...	96—101	...
200,000	Aug. 8	3½	3½	Do. 3½ p.c. Red. Deb. ...	93—98*	−1
427,859	Apl. 25	1/2⅔	9¾	S. Western Gas & Water Ord.	16/6—18/6	...
160,523	,,	−/10½	−/10½	Do. 4½ p.c. Red. Cum. Pf.	19/—21/—	...
110,000	June 3	4	4	Do. 4 p.c. Red. Deb. ...	95—100	...
750,541	Aug. 8	5½	5	Southampton Ord. 5 p.c. ...	106—111*	−2
148,836	June 3	4	4	Do. 4 p.c. Deb.	95—100	...
350,000	Aug. 8	5½	5½	Swansea 5½ p.c. Red. Pref. ...	106—111*	−2
94,000	June 3	3½	3½	Do. 3½ p.c. Red. Deb. ...	95—100	...
1,076,490	Aug. 8	6½	6½	Tottenham and District Ord.	125—130*	−2
409,835	,,	5½	5½	Do. 5½ p.c. Pref. ...	117—122*	−2
62,235	,,	5	5	Do. 5 p.c. Pref. ...	110—115*	...
371,850	June 3	4	4	Do. 4 p.c. Deb. ...	96—101	...
85,701	Apl. 25	6	6	Tuscan 6 p.c. Red. Deb. ...	95—101	...
888,629	Apl. 4	4	6	U. Kingdom Gas Cor. Ord. ...	18/6—20/6	...
937,743	May 9	4½	4½	Do. 4½ p.c. 1st Cum. Pref.	19/6—21/6	...
500,000	,,	−/1·15	4	Do. 4 p.c. 1st Red. Cum. Pf.	19/—21/—	...
745,263	June 3	4½	4½	Do. 4½ p.c. 2nd Non-Cum.Pf.	16/—18/—	...
1,000,000	Mar. 7	3½	3½	Do. 3½ p.c. Red. Deb. ...	96—99	...
373,939	Aug. 8	7	7	Uxbridge, &c., 5 p.c.	132—137*	−1
133,010	,,	5	5	Do. 5 p.c. Pref. ...	108—113*	−2
1,371,138	Aug. 8	7	7	Wandsworth Consolidated ...	135—140*	−2
2,525,768	,,	4	4	Do. 4 p.c. Pref. ...	96—100*	−1½
1,343,964	June 3	5	5	Do. 5 p.c. Deb. ...	115—120	...
383,745	,,	4	4	Do. 4 p.c. Deb. ...	97—102	...
400,000	,,	—	§25/—	Do. 3¾ p.c. Red Deb.	97—102	...
558,342	Aug. 8	7	6⅔	Watford and St. Albans Ord.	133—138*	−2
200,000	,,	5	5	Do. 5 p.c. Pref. ...	108—113*	−2
200,000	,,	5½	5½	Do. 5½ p.c. Pref. ...	118—123*	−2
200,000	June 3	4	4	Do. 4 p.c. Red. Deb.	96—101	...
100,000	,,	3½	3½	Do. 3½ p.c. Red. Deb.	94—99	...

a.—The quotation is per £1 of stock. * Ex. div. † Paid free of income-tax. ‡ For year. § Actual.

Supplementary List and Provincial Exchanges overleaf.

STOCK AND SHARE LIST—Cont.

Supplementary List, not Officially Quoted, London

Issue. £	When ex-Dividend.	Dividends. Prev. Hf. Yr. % p.a.	Dividends. Last Hf. Yr. % p.a.	NAME.	Nominal Quotations Aug. 12.	Rise or Fall on Week.
202,152	Mar. 21	5	5	Ascot Ord.	103—108	...
128,182	July 18	5	5	Do. 5 p.c. Pref.	108—113	...
31,035	Mar. 21	...	–/4⅛	Associated Utilities 4 p.c. Pref.	16/—18/–	...
100,000	Dec. 13	...	3⅛	Do. 3⅛ p.c. Red. Deb. ...	95—100	...
17,000	Feb. 21	8	8	Bognor Orig. Ord. 'A' ...	155—165	...
62,210	,,	8	8	Do. New Addl. 'A' ...	155—165	...
87,160	,,	7	7	Do. New 7 p.c. max. ...	150—160	...
37,440	Aug. 8	10	10	Cam. Univ. & Town 10 p.c. max.	188—198*	—2
125,970	,,	7	7	Do. 7 p.c. max.	133—138*	—2
39,025	,,	5	5	Do. 5 p.c. max.	97—102*	...
96,410	July 18	4½	4½	Cardiff 4½ p.c. Pref.	95—100	...
150,000	Aug. 8	4	4	Croydon 4 p.c. Pref.	97—100*	—1
130,000	June 20	4	4	Do. 4 p.c. Deb.	97—102	..
65,000	Aug. 8	8½	7½	Eastbourne 'A' 5 p.c. ...	138—148*	—2
198,000	,,	7	6	Do. 'B' 3½ p.c.	115—125*	...
112,312	,,	5	5	Do. 5 p.c. Pref.	107—112*	...
130,000	June 20	5	5	Do. 5 p.c. Deb.	112—117	..
24,000	Aug. 8	8½	8½	Great Yarmouth 8½ p.c. max.	43—48*	...
59,400	,,	7½	7½	Do. 7½ p.c. max.	33—38*	...
51,160	June 3	5½	5½	Do. 5½ p.c. Deb.	121—126	...
152,600	Feb. 21	8	9	Guildford Cons.	167—172	...
54,055	,,	5	5	Do. 5 p.c. Pref.	108—113	...
68,250	June 20	5	5	Do. 5 p.c. Deb	107—112	...
156,600	Feb. 21	7½	7½	Hampton Court Cons. ...	138—143	...
80,000	Aug. 8	4	4	Lea Bridge 4 p.c. Pref. ...	94—99*	...
60,000	,,	6	6	Do. 6 p.c. Pref.	121—126*	—2
94,876	June 3	4	4	Do. 4 p.c. Deb.	95—100	...
73,620	Mar. 7	8⅜	8⅜	Luton Cons. 'A'	155—165	..
107,960	Mar. 21	4	5⅛	Mid Kent Ord.	88—98	...
230,940	Aug 8	10	10	Oxford & District Ord. ...	195—200*	—3
47,112	Feb. 7	5	5	Do. 5 p.c. Pref.	106—111	...
50,000	,,	6	6	Do. 6 p.c. Red. Pref. ...	108—113	...
126,193	May 9	7½	7½	Peterborough Ord.	135—145	...
64,990	Mar. 7	6½	7½	Redditch Ord....	120—130	...
166,850	Aug. 8	8	8	Romford Ord.	142—147*	—2
60,000	,,	4	4	Do. 4 p.c. Pref.	97—100*	...
44,000	Mar. 21	5	5	Do. 5 p.c. Deb.	111—116	...
25,570	Aug. 8	5½	5½	Rugby 5½ p.c. Pref.	120—125*	—3
25,000	,,	6	6	Do. 6 p.c. Red. Pref. ...	104—109*	—1
42,750	June 3	5½	5½	Do. 5½ p.c. Deb.	118—123	...
110,950	Feb. 21	8	8	Ryde Ord.	140—150	...
270,086	Mar 21	7	7	Slough Ord.	128—133	...
21,000	June 20	5	5	Do. 5 p.c. Deb.	110—115	...
28,872	May 9	5½	5½	S. Midland Gas Cpn. Ltd. Ord.	19/—21/–	...
28,866	Mar. 7	4½	4½	Do. 4½ p.c Red. Cum. Pref.	18/6—20/6	...
117,228	Aug. 8	7	5	Swindon Cons.	102—107*	—2
60,425	June 3	5	5	Do. 5 p.c. Deb.	112—117	..
64,380	June 3	5	5	Torquay & Paignton 5 p.c. Pref.	107—112	...
130,000	Aug. 8	8	5	Wakefield Ord.	116—121*	—2
81,650	,,	5	5	Do. 5 p.c. max.	100—105*	—1
82,000	Aug. 8	6	6	Weymouth Ord.	103—108*	—2
98,384	Feb. 7	6	6	Wolverhampton 6 p.c. Pref.	118—123	...
160,000	June 20	5½	5½	Do. 5½ p.c.Rd.Db.	105—110	...
90,000	June 20	5	5	York 5 p.c. Red. Deb. ...	104—109	...
133,640	July 18	6½	6½	Yorktown (Cam.) 5 p.c. Cons.	118—123	...
120,000	,,	5	5	Do. 5 p.c. Pref.	105—110	...
35,000	June 3	5½	5½	Do. 5½ p.c. Deb.	120—125	...

BRISTOL EXCHANGE

Issue. £	When ex-Dividend.	Dividends. Prev. Hf. Yr. % p.a.	Dividends. Last Hf. Yr. % p.a.	NAME.	Quotations Aug 12.	Rise or Fall on Week.
347,756	July 18	6	5	Bath Cons.	118—120	...
1,667,250	July 18	5	5	Bristol, 5 p.c. max.	111—113	...
120,420	June 3	4	4	Do. 1st 4 p.c. Deb. ...	101—103	...
217,870	,,	4	4	Do. 2nd 4 p.c. Deb. ...	101—103	...
328,790	,,	5	5	Do. 5 p.c. Deb.	119—122	...
274,000	Aug. 8	5	5	Newport (Mon). 5 p.c. max....	97—99*	—2
13,200	Mar. 21	7	8⅜	Pontyp'l Gas & W. 10 p.c. 'A'	13—14	...
13,600	,,	5	6	Do. 7 p.c. 'B'	12—12½	...
40,000	,,	5	6	Do. 7 p.c. 'C'	12—12½	...
140,778	Aug. 8	5	5	Weston-super-Mare Cons. ...	108—110*	—2
64,338	June 20	4	4	Do. 4 p.c. Deb.	95—100	...
33,340	,,	7⅛	7⅛	Do. 7⅛ p.c. Deb.	151—154	...

LIVERPOOL EXCHANGE

Issue. £	When ex-Dividend.	Dividends. Prev. Hf. Yr. % p.a.	Dividends. Last Hf. Yr. % p.a.	NAME.	Quotations Aug 12.	Rise or Fall on Week.
157,150	Aug. 8	6½	5	Chester 5 p.c. Ord.	107—110*	—2
92,500	June 20	4	4	Do. 4 p.c. Pref.	95—99	...
36,430	,,	3½	3½	Do. 3½ p.c. Deb.	87—90	...
41,890	,,	4	4	Do. 4 p.c. Red. Deb. ...	97—101	...
2,167,410	Feb. 21	6	6	Liverpool 5 p.c. Ord.... ...	124⅛—125⅛	...
245,500	June 20	5	5	Do. 5 p.c. Red. Pref. ...	97—102	...
306,083	July 18	4	4	Do. 4 p.c. Deb.... ...	100—102	...
106,280	Aug. 8	10	10	Preston 'A' 10 p.c.	198—208*	—4
188,219	,,	7	7	Do. 'B' 7 p.c.	131—141*	—13

NEWCASTLE EXCHANGE

Issue. £	When ex-Dividend.	Dividends. Prev. Hf. Yr. % p.a.	Dividends. Last Hf. Yr. % p.a.	NAME.	Quotations Aug 12.	Rise or Fall on Week.
122,577	Aug. 8	8	8	Blyth 5 p.c. Ord.	161—162*	—2½
732,000	Feb. 21	5	5	Hartlepool G. & W. Cn. & New	110—112	...
2,061,315	Feb. 7	5⅝	5	Newcastle & Gateshead Con.	23/3–23/9*a	...
682,856	,,	4	4	Do. 4 p.c. Pref. ...	99—100*	—1⅛
776,706	June 20	3⅛	3⅛	Do. 3⅛ p.c. Deb. ...	88½—89½	...
277,285	May 9	5	5	Do. 5 p.c. Deb. '43 ...	104—106	...
332,351	Feb. 7	6	6	Sunderland 6 p.c. max. ...	137—139	...

NOTTINGHAM EXCHANGE

Issue. £	When ex-Dividend.	Dividends. Prev. Hf. Yr. % p.a.	Dividends. Last Hf. Yr. % p.a.	NAME.	Quotations Aug 12.	Rise or Fall on Week.
542,270	Aug. 8	9	6	Derby Con.	133—143*	+½
55,000	June 3	4	4	Do. 4 p.c. Deb.	100—105	...
20,000	June 20	5	5	Long Eaton 5 p.c. Pref. ...	10—12	...
80,000	,,	5	5	Do. 5 p.c. Deb. ...	105—110	...

SHEFFIELD EXCHANGE

Issue. £	When ex-Dividend.	Dividends. Prev. Hf. Yr. % p.a.	Dividends. Last Hf. Yr. % p.a.	NAME.	Quotations Aug 12.	Rise or Fall on Week.
10,000	Aug. 8	10	10	Great Grimsby 'A' Ord. ...	205—215*	...
6,500	,,	10	10	Do. 'B' Ord. ...	205—215*	...
79,000	,,	10	10	Do. 'C' Ord. ...	195—205*	...
1,806,339	Feb. 21	6½	6½	Sheffield Cons.	140—143	...
95,000	July 4	4	4	Do. 4 p.c. Deb.	101—103	...

a The quotation is per £1 of Stock. *b* Actual. * Ex div.

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